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Original Communications

BUILDING A PERIODONTIA PRACTICE WITHOUT CAMOUFLAGE*

By ARTHUR H. MERRITT, D.D.S., F.A.C.D., New York City

(Read at the eleventh annual meeting of the American Academy of Periodontology, Atlanta, Georgia, October 7-10, 1924)

PERIODONTIA may be defined as that branch of dental practice which has for its purpose the care and preservation in health of the supporting tissues of the teeth. It naturally follows that, if this definition is correct, periodontia is the cornerstone of dentistry. Remove it, and the whole structure of dentistry fails; for unless there is preservation of these tissues, all other dental operations are, in their very nature, temporary, just as the care bestowed on the superstructure of a building is temporary if the foundations of that building are neglected. Such care may postpone, but cannot prevent, eventual loss.

Because these things are true, because it should be the first concern of dentistry to prevent or recognize early the manifestations of disease in these tissues, to the end that the teeth be preserved in health, it is obvious that periodontia cannot, and should not be divorced from general practice. It is the alpha and omega of dentistry, for, failing in this, it fails in all. It may go on perfecting its restorative technic, repairing the ravages of decay, replacing lost teeth, and doing all this in such a way as to be the epitome of perfection, and yet fail of complete success, because it has neglected to do first things first.

*This paper and the papers of Dr. Schott, Rich, Stillman and Garvin were presented as a symposium on periodontia practice.

It must be evident, therefore, that periodontia is not a logical specialty of dentistry. There is no line clearly separating it from general practice as in orthodontia. It has in fact been built upon dentistry's failure. It is the stone that was rejected by the builders, which shall yet become the head of the corner. Perhaps it is not too much to say that it is dentistry's camouflage—an attempt, as it were, to disguise its own shortcomings, by pointing to the specialty that has grown up within its ranks, and shifting to it the responsibility that logically rests upon its own shoulders.

While admitting all this, it must not be forgotten that we are face to face with a fact and not a theory. That fact is that there is an almost universal need of more periodontia. This is especially true of preventive periodontia, and this need must be met. But it can never be met by a handful of specialists. It is a problem belonging not to periodontology but to dentistry. The multiplication of specialists will not solve it. It is a problem of education not of the few, but of the many. And this is clearly the duty of the periodontist. It is not enough that we as an Academy go on perfecting our technic in treatment, increasing our numbers and influence, however important these things may be. We should do all these things, but we should do more than this. We must go to our educational institutions and make clear to those in charge the fundamental nature of periodontia in dental practice, to the end that the student be taught the principles and practice of preventive periodontia as of first importance, instead of fixing his attention on the art of dentistry, thereby fostering in his mind the already deeply rooted impression that "filling teeth" is the beginning and end of dental practice. The practitioners of dentistry must also be included. They need the help and encouragement that we as members of this Academy can give them. They must be made to realize the preventive nature of most of the diseases affecting the periodontium and put such knowledge into daily practice. The importance of prevention and early recognition of diseases of the periodontium must be stressed on all occasions. This is the duty of the American Academy of Periodontology.

I should like to see it undertake, through its committee on educational bulletins, the preparation of such a bulletin, thus doing for periodontia what it has so excellently done for other branches of dentistry. In fact, I shall feel that this symposium is largely a failure, if it does not eventuate in a campaign of education, not on how to build up a practice in periodontia without camouflage, but on how to make periodontia what it should be, an essential part of daily dental practice.

Meanwhile, periodontia as a specialty must carry on. Its boundaries must be extended and its usefulness increased. Things must be faced as they are, while we are trying to make them what they should be. While it is clearly the duty of the general practitioner of dentistry to give preventive periodontia the first place in his practice, it is not improbable that, as long as the emphasis is placed on restorative dentistry, there will be those who will fall into neglect, allowing incipient cases to reach an advanced stage, and creating, in this way, the need for the periodontist. It may be doubted also, whether the general practitioner of dentistry will as a rule, acquire the necessary skill to cope successfully with the advanced case. In saying this, however, it must be remembered that the advanced case reached that stage only because preventive treatment, easily within the ability of the average dentist, was not given. And, while it may be too much to expect of erring man that he shall always see his duty and do it, it should be the goal toward which we as a profession should

strive, not forgetting, that a "man's reach should exceed his grasp, or what's a heaven for."

Moreover, there will always be those who, through temperament and experience, will achieve a larger measure of success in the treatment of periodontal lesions than is accorded to the average, with the result that the demands made on his time for such services will in fact force him into specialization. This is as it should be. The doorway into periodontia as a specialty should always be through general practice. Upon no other foundation can a successful practice in periodontia be built.

THE DENTAL HYGIENIST AND DENTAL ASSISTANT IN PERIODONTIA PRACTICE

By C. H. SCHOTT, D.D.S., Cincinnati, Ohio

(Read at the eleventh annual meeting of the American Academy of Periodontology, Atlanta, Georgia, October 7-10, 1924)

THE presentation of a symposium on periodontia practice resolves itself into the consideration as to how we can, by better systems and methods and by added study, increase our efficiency so as to serve our clientele more satisfactorily, command wider appreciation and secure greater remuneration for our services without the sacrifice of life itself. It is because of our failure to recognize the importance of better systems and methods that we are compelled to labor eight or ten hours a day for a mere living, though I reluctantly acknowledge that many are obtaining this living under false pretenses. Even if it were possible to get a living with very little effort, we cannot afford to do so; we cannot afford to coin our brains into dollars, to make mere dollar-chasing the ambition of our lives. As professional men and women, there should be something bigger in us than that—something that will not allow us to sell ourselves so cheaply. No one can respect himself unless he makes the greatest effort to use to the best of his ability, his personal powers and resources.

In order, therefore, to establish a better system in periodontia practice, we have had brought to us through the development of special training schools the dental hygienist, trained primarily to care for and to promote mouth hygiene among the masses, in the schools and in institutions.

As I have been requested to discuss the place of the dental hygienist and dental assistant in periodontia practice, I find, on considering the subject, that it can be interpreted in two ways: the dental assistant and hygienist may be two persons or one and the same person. I am assuming that the second interpretation is intended.

In the first place, I am opposed to permitting the dental hygienist to act also as a dental assistant although this procedure is being followed in many offices. I feel that it detracts from the dignity of the position of hygienist to have that person also serve in the less dignified work of assisting at the chair. I do not mean to imply that in itself the work of the dental assistant is undignified, but I feel that patients have more respect for the position and serv-

ices of a hygienist if the latter attends strictly to the duties of a hygienist. Like most of our members, I do not devote my entire time to the practice of periodontia. I should say that a large percentage of our members, after they were established in a general practice and appreciated the need for improved periodontia service, interested themselves in the practice of periodontia in conjunction with their other work. Permit me to say that no one should have the right to employ a hygienist until the demands on his time are such that he cannot afford to do the polishing and follow-up work, though I am not underestimating its importance. The employer of a hygienist who thinks only of the profits to be derived and the relief from work which may be distasteful I would consider a failure as a periodontist. There are today dentists who are inefficient as prophylacticians and who employ hygienists without sufficient experience to give creditable service. This abuse I recognize as a difficult one to correct. Every dentist employing a hygienist should himself be a periodontist, because, without a thorough knowledge and appreciation of the periodontium in its susceptibility to disease, its treatment and the maintenance of the tissues in a state of good health, he cannot intelligently direct the efforts of a hygienist working under him. The dentist must have the fundamental knowledge as well as the skill to do the work assigned.

Since the periodontist's or dentist's practice is established on an individual basis, the employing of a hygienist is a matter that needs serious consideration. To be successful, the hygienist must possess an unusual personality as well as ability; and if she does not show these qualifications, it is hard for a periodontist to turn over his work of prophylaxis to the hygienist. A patient comes to the periodontist or dentist because he has confidence in him and his work; and, for that reason, it is very necessary to employ hygienists who are well educated and capable. They should at least be graduates of high schools, and a college training would be an asset. We must raise the educational standards and should encourage able young women to take up the work. The dentist himself, moreover, must have implicit confidence in the work of the hygienist in order to inspire the confidence of his patients. On these facts hinges the success of the venture. The only chance for a failure of a hygienist such as I have described in periodontia practice, as I see it, would be insufficient training. Therefore, the training course must be broadened.

We are confronted daily with the question as to how successfully the employment of a hygienist is working out in private practice—and usually that question really means: Does it pay financially? My answer is that it does pay, both in financial remuneration and in the service of supervising the patient's dental health, provided the hygienist's efforts are carefully and intelligently directed. The service of periodontists, whether they devote part or full time to the work, are in greater demand than ever owing to the widespread publicity that has been given in the last few years to the importance of mouth hygiene and care of the teeth. Since hygienists are not legally permitted to do a complete apoxesis, their skill must be developed in the removal of the deposits above the gingival margins, the polishing of the teeth and the follow-up instructive work as to the care of the gums and teeth and as to general health. Why, therefore, is not a busy periodontist justified in employing a hygienist to do the work for which the latter is trained, devoting his time to the more important deep scaling and surgery? In view of the limited number who devote their time to the practice of periodontia, and in view of the fees commanded, our services are prohibitive for the people

of moderate circumstances; therefore, I feel that the more thoroughly trained hygienist who is legally permitted to perform a more complete apoxesis will supply a great public need.

Regarding the hygienist, my observation is that the average graduate hygienist of one year's training is not prepared to give the best service to our patients until she has had much more practical experience. Every hygienist whom I have interviewed has made the statement that she did not feel that she has had enough practical experience in work on adults, and it would be my suggestion that hygienists in training have more practice work of this kind.

It is my belief, then, that a busy periodontist or dentist who can employ a capable hygienist is able to serve the public to a much greater degree, and, after all, that is the aim of every dentist: to serve and to serve well. In so doing, he should not lose trace of the fact that he must have financial reward, and my actual experience shows that the employment of a hygienist not only pays financially, but also brings results in actual service and in satisfaction to patients.

PERIODONTIA SERVICE TO THE POOR

By CELIA RICH, D.D.S., Nashville, Tennessee

(Read at the eleventh annual meeting of the American Academy of Periodontology, Atlanta, Georgia, October 7-10, 1924)

THE subject "Periodontia Service to the Poor" was doubtless assigned to me because of the fact that, for more than three years, I have been devoting several hours a week to work in a free dental clinic in Nashville. This clinic is located at a social center in one of the poorer sections of the city; and, in order to make clear to you the nature of the field and the opportunities for obtaining clinical material, let me explain that this center is a clearing-house for the neighborhood, and to it and the workers engaged here are brought every conceivable family problem.

The neighborhood people make abundant use of its opportunities and evidently consider the institution as really belonging to them. This would seem to be an ideal location for a dental clinic. Social workers have been insistent as to the advantage of bringing health aids to the very doors of the poor. They will use opportunities presented in this intimate way that they would otherwise disregard entirely. Another advantage lies in the fact that the potential clientele here is so varied, embracing as it does children under school age and young people and adults past school age.

Now what has been our experience with the dental clinic? We have a steady patronage, with a waiting line always on hand, but the patients are practically all children, and they come originally because of pain or discomfort or disfigurement produced by stained, discolored or irregular teeth. In the very young, it is rare indeed to find a pathologic periodontal condition other than those acute conditions brought about by the loosening of temporary teeth and abscesses on teeth whose pulps have become infected; and then treatment and cure is, of course, a simple matter.

Of the considerable number of patients treated between the ages of 12

and 16 years, the number with periodontal lesions has been negligible.

Few adult patients come in for treatment except in acute painful conditions requiring extraction. It may be well to note that, in this class of patients, the worst conditions encountered have been found in the mouths of those who have "seen better days," as they would express it; days when they were able to go to a pay dental office and have elaborate bridgework inserted. These cases are very difficult to handle adequately at the clinic as we cannot offer to replace the poor restorations with better, ourselves, and the patients object to having their cherished crowns and bridges removed altogether. One case recently was characteristic: the patient insisted on going back to the dentist who had already made her most uncomfortable and had all but ruined her remaining teeth, because he had guaranteed the work for five years and the first year was not up yet.

Of the average typical incipient periodontoclasia cases, very few have been encountered.

In summing up the situation, I cannot better describe our experience than by quoting from the paper of Dr. Michael M. Davis in the August JOURNAL OF THE AMERICAN DENTAL ASSOCIATION: "People with dental needs that seem most urgent are brought to these clinics by interested people, or come themselves, brought more or less by the urgency of the moment." When one has the vital problems of sustenance, of bare existence sometimes, to face, he is not likely to give heed to any bodily symptom unless it is one of extreme pain or discomfort. Far less will he seek professional aid for the condition. Remembering these facts, let us consider for a moment the nature of some of the early symptoms of periodontoclasia, or rather, the absence of these early signs, and it will not be difficult to understand the dearth of periodontia material in a free clinic. There is no pain in the early stages of the disease, often the "visible symptoms of inflammation may be partly or wholly lacking." (Stillman and McCall).

It is in the insidious nature of their inception that we have most to fear from periodontal lesions, and we know that in our own offices, patients often, if not in the majority of cases, do not realize that their periodontal tissues are in need of treatment until we bring the matter to their attention, and then only too often the lesions have passed to the destructive or truly periclastic stage.

If we are to serve the poor in these cases, it is of even greater importance here than with our more favored patients to discover and give early aid, for the problem of home care as well as of professional treatment becomes more complicated as the disease progresses, and the difficulty of giving the proper home care to the mouth is one of the great drawbacks to the successful handling of these cases. It has been pointed out by Drs. Stillman and McCall that there are few factors of greater importance to a favorable prognosis than "the ability of the patient to care for the mouth at all times in such a way as to keep the oral tissues not only clean but stimulated." Unfavorable, often unhygienic, living conditions, lack of time, inability to pay for the right kind of food; all these things operate against a favorable prognosis increasingly as the disease advances. Further than this, giving orthodontic relief and building the necessary extensive restorations in advanced cases is obviously impracticable for the poor.

It will thus be seen that it is absolutely necessary to get these cases at their very outset. The problem here would seem to be one of education and of the close cooperation of nurses and of social service workers, who must themselves have a good understanding and an appreciation of the importance of periodontia service.

On the surface of things, our experience thus far at the clinic would seem

to offer only discouragement when viewed from the standpoint of the dentist eager to serve in the field of periodontia and incidentally looking for interesting clinical material for his own use and enlightenment. From the broad humanitarian point of view, there is much that is gratifying in the work, and the apparent discouragements have served to strengthen our opinion not only that prevention is the best treatment, but that further, in these cases, it is the only practical treatment.

At the clinic, we have made it a matter of routine to inquire carefully into the diet and living habits and conditions in every case, and where these are contrary to the laws of health (even though ill-effects are not yet apparent) the patient, young or old, is emphatically advised as to the proper regimen. Every patient is given a prophylactic treatment, with careful instruction as to tooth and gum brushing; and, at intervals, groups are assembled for simple instructive lectures on the care of the mouth and teeth. The dental hygienist, especially when she is attractive and fired with enthusiasm for her work, can be of great help here as well as with the prophylactic treatments.

In this way, we have at least been able to arouse a live interest in teeth and oral tissues in the neighborhood of the clinic, and if the work can be pursued, it is hardly too much to expect that, at some future time, there will be not only very few periodontoclasia cases coming to the clinic, but very few actually existing in the neighborhood.

Let me quote again from Dr. Michael Davis' admirable paper: "Thousands can see the value of pulling an aching tooth to one who will see the necessity for treating a child in order to bring him up without serious dental disorders with the assurance that he will in turn bring up his children likewise. We must have this long look ahead. We must count on the children. It requires patience and faith and hope to carry out such a program."

THE RELATION OF THE PERIODONTIST TO OTHER MEMBERS OF THE DENTAL AND MEDICAL PROFESSION

By PAUL R. STILLMAN, D.D.S., F.A.C.D., F.A.A.P., New York City

(Read at the eleventh annual meeting of the American Academy of Periodontology, Atlanta, Georgia, October 7-10, 1924)

IT is now ten years since the emergence of periodontia from a semichaotic state to the dignity of a specialty—an event that was signalized by the founding of this Academy. I shall not take up your time with a discourse on the development of this specialty during that period. The title of this symposium calls to my mind a symposium of similar scope that had a place on the program of this Academy during its meeting held in Pittsburgh in 1916; and it may be of interest to summarize briefly the opinions presented at that time. Three papers were read: the first by Dr. Frank C. Pague of San Francisco, a specialist in periodontia of many years standing; the second by Dr. Herbert A. Pullen of Buffalo, an orthodontist, who had long been a specialist; the third by Dr. O. L.

Hertig of Pittsburgh, a general practitioner of dentistry.

In the first two papers, the opinion was held that periodontia was not only a specialty of dentistry, but also a specialty capable of being conducted in the exclusive and isolated fashion of orthodontia, as we at present know it. It was held, in other words that the periodontist could, and should, treat periodontal disease and nothing else. His relation to the general practitioner was held to be the same as that of the orthodontist who treats malocclusion for the patients of other dentists without reference to their other dental needs.

The third essayist in this symposium took issue with the views just quoted. He asserted that periodontal disease was primarily the concern of the general practitioner; that the properly equipped dentist should be capable of making a diagnosis and treating periodontoclasia whenever he met it.

The latter views were not received with sympathy at the time of their presentation. The reason for this was not far to seek. The very society before which the paper was being read was composed of those who had become specialists through the development of a highly refined technic for the removal of irritating substances from the tooth and root surface. They had found by experience that the acquisition of this technic was most readily accomplished by devoting to it their entire time and that the technic itself was not easily acquired. Knowledge of the etiology and pathology of periodontoclasia was at this time in its infancy. Hence, the relationship of periodontal disease to factors other than calculus and detritus was unknown. When treatment consisted solely of curetting root surfaces and the application of astringent medications, together with prophylactic treatment, there was no reason why the periodontist should be concerned with fillings, bridges, etc. These he had left behind him after a new professional birth.

While the periodontist of eight or ten years ago had at that time no knowledge of these relationships, neither had the general practitioner. In a game of chance, one places his bet on either the "odd" or the "even" numbers. It would seem in choosing to defend the less popular side of the argument, Dr. Hertig was guided rather by good fortune than by the possession of knowledge which, as a matter of fact, has only been developed during the past few years. How sound his position was more recent developments have attested.

Those who specialized in periodontia at that time were hoping to make their technical skill available to other dentists. It was a field in which the general practitioner was admittedly deficient. The specialists consequently appealed to the general dentist for an opportunity to give periodontic treatment to his patients, an appeal which was sympathetically received by many who realized their deficiencies in this branch of practice. At first, the results were most pleasing to all concerned.

Although the knowledge of the etiology was in an embryonal condition, the periodontist soon discovered that the health of the periodontal tissues was bound up very definitely with the character of the restoration employed. He found that many restorations already in the patients' mouths had evidently a causative bearing on the disease as he began to understand it; also, that his efforts to secure and maintain a condition of health were being neutralized by restorations of this character. This observation might be said to be the beginning of the realization of the concept of function, as a fundamental in periodontal etiology. It may not be amiss to call attention to the interesting fact that, at the present time, function is regarded by many in our profession as fundamental in the planning and carrying out of all dental operations.

As soon as the periodontist made this discovery, he was placed in a very

embarrassing position. He was compelled in many cases to request the dentist who referred a patient to him to remove almost the entire dental equipment which had been furnished, such as crowns and bridges, although these restorations might have been recently inserted and were believed to be adequate. The implied criticism created feeling; nor could we blame the dentist for his discomfiture, since he had done this work to the best of his knowledge.

Another uncomfortable situation arose when the periodontist suggested, no matter how tactfully, the insertion of certain types of restorations that he believed to be conducive to health. To accomplish satisfactory results in his own field, the periodontist perforce dictated procedures in another field than that in which he was actually practicing. Even with the best will in the world to cooperate, the carrying out of details frequently fell short of the desired end, and disappointment came to all concerned. Even in those cases in which satisfactory cooperation was achieved, there still were failures in treatment through lack of appreciative understanding of the part played by coordination in the functional relations of the teeth—a factor in health.

We have now come to recognize that traumatic occlusion is a thing that disturbs function so gravely as to be one of the most important pathogenic agencies that are found in the human mouth. And its detection and correction have come to be a major part of the duties of the periodontist. It has become necessary to make adjustments of occlusion after the insertion of practically all restorations, no matter how skilfully and judiciously they be constructed. Herein has occasionally been found another factor disturbing the status of the relationship between the periodontist and the general practitioner.

All of these things have developed as a result of the realization on the part of the periodontist that he assumed a definite responsibility when he undertook to treat a case of periodontal disease. Since he held himself out as a specialist in this field, his responsibility was greater than that of the general practitioner who referred the patient to him. Whether or not his suggestions, or his adjustments of occlusion, might arouse feeling on the part of the general practitioner, it was his concern that the mouth be placed in a state of health and kept there.

It was inevitable, then, that one of two things should occur, either the man who made a study of modern periodontic methods remained a general practitioner or he devoted himself to periodontia as a specialty and became associated or had associated with him, more or less closely, one or more general practitioners who were in sympathy with his ideas. The manner of association may vary, but some sort of association has been entered into by nearly all practicing periodontists.

Another phase of the relationship between the periodontist and the other members of the dental profession has been brought out as a result of the development of knowledge in periodontal etiology. I refer again to traumatic occlusion, which has been found to require correction in cases of incipient periodontoclasia and also in some disorders outside the field of periodontal disease. Here, we are face to face with the evident need of a knowledge supposedly held only by the periodontist, but to be applied to cases that apparently do not need to be referred to the specialist in this field. The conclusion is that the general practitioner must know periodontology even though he does not practice periodontia. In other words, he may not need to acquire the technic requisite for the scaling of root surfaces, but he must know the causes of periodontal disease and should be prepared to recognize such disease in its incipiency. Were we to isolate the per-

iodontist as the orthodontist is isolated, such cases as these to which I refer would never receive the attention that the present state of knowledge in our profession makes possible.

In the field of diagnosis, the specialist in periodontia has progressed through an evolutionary period, comparable to his evolution in the field of treatment. Ten years ago, diagnosis in this field consisted of detecting visible pus and inflammation, and mobility of the tooth. With advances in the knowledge of periodontal pathology and etiology have come advances in the science of diagnosis and prognosis. The periodontist has almost of necessity come to acquire the ability to diagnose disease conditions that are not patently infections of the periodontal tissues. Here, again, we see the necessity for close relationship between the specialist in this field and the general practitioner. Since such diagnosis is frequently the means of detecting disease conditions that have a bearing on or are influenced by metastatic disease in the body, the services of the periodontist have become enlarged in a very important branch of practice. Here, the specialist in periodontia comes in intimate contact with the medical practitioner. His relationship to the medical man, however, is quite different from his relationship to the dentist. Omitting reference to feeling that may be aroused between the periodontist and the dentist, in cases of diagnosis for bodily disease, the fact remains that, essentially, the educated periodontist is the connecting link between the dental and medical professions.

In his capacity as dental diagnostician, the periodontist assumes a place of the utmost importance in relationship to the medical practitioner. The medical man has virtually no training in this field, nor is it practical to give him adequate instruction therein. He must depend on the dentist as the dentist depends on him. The medical man must receive from him the best diagnosis that dentistry can give, and this must be furnished by the specialist in periodontia or by a dentist in general practice who is a trained periodontologist. On the other hand, since it is impractical to give every dentist a complete medical education, the dentist must seek the cooperation of the medical practitioner in those phases of his work that have to do with diagnosis. The mouth is, as we well know, an integral part of the body. Diagnosis of oral pathologic conditions can be fully made only through an understanding of the relationship between disease in the mouth and disease elsewhere in the body. The dentist must therefore depend on the medical man in many aspects of his work.

The question that now confronts us has to do with the probable future of periodontia. Shall we continue to have specialists in this field? Will the specialist of the future occupy a position of isolation as does the orthodontist or the prosthodontist; or will he continue to be associated with men in general practice as at present? Will the medical man of the future require the services of a specialist in dental diagnosis?

I shall not presume to answer these questions with finality. Just as ten years ago, we were unable to foresee the developments that have led up to the present situation, so today we can only speculate on the developments that the further acquisition of knowledge may bring about. But there are some points on which I feel that it is possible to take a stand. In the first place, the science of periodontology is so fundamental in dental practice that no dentist can be properly educated to practice his profession unless he is thoroughly grounded in the essentials of this branch. The general dental practitioner of the future must have a complete knowledge of the nature of disease and the methods for its treatment. Only thus can he protect his patients from the encroachment of disease. Prophylaxis in any part of the body is predicated on an un-

derstanding of the nature of the disease that is to be prevented. When we realize that every restoration is a factor either for the preservation of health or the promotion of disease, we at once fix the responsibility of the general practitioner as to the knowledge of periodontology which he must possess.

Are we to understand, then, that periodontia is to continue as a specialty in dentistry as it is at present considered, or is it to be merged into and become a part of general dentistry? The answer to the latter question should unquestionably be "yes," for the reasons we have just stated. Whether this state of affairs will actually come about is largely a matter for our dental schools to decide. At the present time, the effort to teach the dental student periodontology in its broad aspect is either weak or lacking. Dentists are still being forced to acquire this fundamental part of their training through the medium of graduate instruction and the dental journals.

Let us assume that the educational requirements in this field will eventually be met, so that every dentist is thoroughly grounded in the essentials of periodontal science. We still are interested in the question as to whether individual dentists will continue to limit their practice to the treatment of periodontoclasia. Theoretically speaking, if our profession should develop as we would have it, our patients would never become subject to a degree of periodontal disease that would require the services of a specialist. Incipient cases would be recognized and treated adequately as a part of the routine of general practice.

Actually, I believe that this utopian state of affairs will not be entirely achieved as long as we continue to live in our present-day manner. I refer here to the tendencies toward the progressive degeneration of the dental and alveolar tissues, to the human frailty that causes people to neglect their teeth, and to the tendency of some dentists to fall short in the performance of their duties. I believe, in other words, that there will always be the need for the acquisition of a highly developed technic for the treatment of periodontal disease. And, since dentists differ from each other temperamentally, as well as in ability, there will always be some who will prefer to do this work and some who will prefer not to do it.

It may be beside the point, but it has been my observation that there have been not a few who have declared their intention of specializing through envy or mercenary motives. The true specialist is one who takes up his work through the impelling influence of a deep attraction for it and the recognition of necessity for more highly developed service in that field. But, specialization there will always be, and it is my belief that the specialist in periodontia must continue, as at present, to be closely associated with those rendering all other kinds of dental service.

When we consider the future of the periodontist in his relation to the medical practitioner, the answer is, I believe, similar to that regarding his relationship to the dental practitioner. Every dentist should be so trained that he will be capable of recognizing disease in the mouth and evaluating its influence on the health of the body. But I believe that, in many instances, the semidetached position of the specialist in periodontia will enable him to form a more impartial judgment than will the general practitioner, whose thoughts are more closely bound up with restoration. This is no reflection on the latter; but it is inevitable that the man who must restore missing teeth will have his judgment influenced by the desirability of retaining diseased teeth that are strategically important. Hence, my belief that there will always be a place for the specialist in periodontia as an aide to the medical internist.

It has given me much pleasure to prepare this brief paper as a part of the symposium on the practice of periodon-

tia. My opinions have been formulated as a result of my own experiences and the observation of the experiences of many others. My work and my interest is in periodontia, but my heart is in dentistry as a whole. I see things as I think they should be and, unconsciously perhaps, I have attempted to influence you and others to whom I have talked, toward the acceptance of my views. Were I an accredited teacher in this field, I might argue my views more strongly still. But I recall a quotation which seems so apt that I shall repeat it here:

> I am not a teacher; only a fellow traveler of whom you ask the way. I pointed ahead—ahead of myself, as well as you.

THE HANDLING OF A PERIODONTIA PATIENT

By M. H. GARVIN, D.D.S., Winnipeg, Canada

(Read at the eleventh annual meeting of the American Academy of Periodontology, Atlanta, Georgia, October 7-10, 1924)

IN dealing with the subject "The Handling of a Periodontia Patient," I shall try to be as practical as possible, stating how I myself look on these questions, and I shall regret very much if I make statements, the credit for which should be given to someone else. If such is the case, I can only excuse myself in the words of the old book binder "Kind brother if this my performance doth in aught fall short of promise, blame not my good intent but my imperfect wit."

A few months ago, in talking to a successful broker whose firm has business relations the world over, I asked what he considered the outstanding asset in attaining success, and the instant reply was "Health." I mention this in passing as one very essential point in the handling of a periodontia patient; in fact, in making a success of any calling in life. However, in the successful practice of dentistry, which makes such a call on one's reserve and nerve energy, health problems should constitute a real study. I would even urge that this study be made part of the curriculum of every dental college, bearing on the problem of how the student must live in order to acquire the highest degree of health and efficiency.

One should mention also at the outset of a consideration of this problem personality and character, both of which can be developed to a marked degree. Given a reasonable amount of technical ability, the average patient values character in his doctor or dentist even more than professional skill.

Mr. X has telephoned for an appointment, and twenty minutes is reserved for the patient with the periodontist, and, preferably, thirty or forty minutes for the hygienist following. At this appointment, a general survey of the mouth is made. A brief history is taken, considering hereditary tendencies, past history as to overload and present condition of health. The teeth are tested for vitality, and the necessary explanation is given to the patient relative to the required roentgenograms. We have found that this explanation can be given more effectively and more quickly if certain typical roentgenograms, say a dozen prints neatly mounted on a card and framed, can be shown to the patient. In advanced or systemic cases, a roentgenray examination of the entire mouth is

necessary. In every case, pulpless teeth, teeth with fairly deep pockets and areas in which teeth have been extracted should be examined by roentgen ray. The pictures are now taken by the assistant in charge of this work, and while they are being developed, the hygienist gives a prophylactic treatment. The patient feels that something has been accomplished on this first visit, even though but twenty minutes of the operator's time has been used. The operator takes a hurried look over the roentgenograms which have been mounted wet on a piece of clean glass, before having the patient dismissed, in order to see whether it is desirable to take any of the pictures over, and also to get an idea as to how long to make the second appointment.

The second appointment is made two days later, and, in the meantime, the secretary obtains a report on the credit standing of the patient if a stranger. The second appointment may be for half an hour or an hour. If it is a case requiring study casts to be mounted on an anatomic articulator, we would take the impressions at this sitting and also mark our chart carefully, indicating all caries, depth of pockets and general condition of the gums. We will locate all foci of infection, and we will indicate the teeth to be extracted, those to be devitalized or extracted, etc. In this type of case, the final examination, when the case is discussed with the patient, does not take place until the third sitting. Before this sitting, the case should be studied very carefully. Half the battle is in making a correct diagnosis. It is here that many failures are accounted for. There may be several ways of undertaking this case. These plans should be carefully outlined and preparation made to impart them clearly and in detail to the patient.

In a simpler case, in which study casts are not necessary, and the mouth becomes our anatomic articulator, we complete our examination at the second sitting, recording on the chart all reconstructive work and giving an estimate of the cost to the patient, when advisable (and we usually find it advisable).

In giving estimates, we have found uniform headings helpful. These headings are printed on the patients' charts and are as follows:

ESTIMATE

Date.

.....

Alrdy.
Roen.
Exam.
Proph.
Perio.

.....

Sup.
Inf.

.....

Sup. D.
Inf. D.

.....

Gen. A.
Extra.

.....

Total.

.....

Initial.

Alrdy. stands for already, i. e., those fee items that have already been charged previous to the figuring on the estimate, including such items as may have been involved in relieving pain or treating some urgent pathologic condition. Roen. for roentgenograms; Exam. for examination fee; Proph. for prophylaxis; Perio. for periodontoclasia; Sup. for superior or the sum total of the reconstructive items other than denture in the maxilla; Inf. for inferior or reconstructive items in the mandible; Sup. and Inf. D. for dentures; Gen. A. for general anesthetic. Of course, this suggestion would no doubt be more applicable in case the periodontist is associated with a group clinic, or has salaried operators working under his direction, he thus being enabled to make an estimate on the total amount of work to be done.

When the estimate is given, terms of

payment can also be arranged, when this is necessary.

The second or third appointment, when the work is discussed with the patient, is perhaps the most important or critical stage in the whole question of handling the patient and building up a successful periodontia practice. On the success of this particular interview often depends the whole future success of the work and the satisfaction of both patient and operator for years to come. It is here that we can best explain the necessity of proper cooperation on the part of the patient, the home requirements and the regular prophylactic care following the actual operative procedure, even refusing to undertake the case unless this cooperation is assured.

At this point, we cannot overestimate the value of a thorough knowledge of human nature. Every successful periodontist has acquired this knowledge either by sad experience or by hard study, consciously or unconsciously. In these days of study clubs, we would suggest that a study club in psychology could be made mutually very helpful.

A study of character is an aid in employing assistants who will be suited to the work assigned to them. It assists one in knowing how to collect accounts. Above all, it teaches one how to gain access to the mind of the patient the quickest and easiest way. For example, other things being equal, the man with a decidedly convex profile is very practical. One should present a proposition to him as briefly as possible. Show him a picture of the condition. He is interested in the things he can see. He is more interested in the facts of the case than in the reason for it all. On the other hand, the patient with a decidedly concave profile is usually slow of thought and action. He thinks far better than he sees. He is more interested in reasons for facts than in the facts themselves. He wants to know the facts about traumatic occlusion but must have the reason for it all. He will believe the facts only if the theory is sound. He will not be hurried, so we will be sure to keep a longer appointment for this patient, at the second or third sitting made for finally deciding on the work to be done, than for the patient with the convex type of profile. The patient with the short upper lip will cooperate best if he or she is complimented from time to time on the result of his or her effort; while the patient with the long upper lip will usually do his or her duty regardless of any recognition or praise on the part of the operator. These facts are simply mentioned as illustrations to show the possibilities in this field of endeavor.

Now having decided on our diagnosis and as to how we are going to present our diagnosis to the patient, we proceed, at this second or third appointment, to sell our services to the patient. I do not like that way of expressing it, but I have failed to find a more expressive term to describe just what actually takes place.

At this time or very soon afterwards we shall have something to say about diet and general habits of living, as the individual case may require. One cannot but be impressed with the fact that bacteria, having very marked elective localization characteristics, lose those characteristics when grown for some time on any prepared culture mediums in the incubator. The question naturally comes to one: Why not change the culture mediums of the host by diet and proper living so that the dangerous bacteria of today may become more or less inert tomorrow?

We shall make our future appointments with close regard to the health of the patient and the nature of the work.

The following additional steps in treatment might be suggested: 1. General prophylaxis, if not already given. 2. Necessary extractions. 3. Capping or devitalization of pulps. 4. Correction of traumatic occlusion. 5. Surgical treatment of the gums and general

periodontic treatment. 6. Reconstruction of the mouth as to contacts, fillings, bridges, etc., restoring balanced occlusion. 7. Completion of periodontic treatment and final polishing. 8. Instructions to patient as to care of mouth. 9. Arrangement for following up patient.

We are convinced that a "prophylactic list," as we call it, is an essential to every periodontist, and that the name of every patient living within reasonable distance should be on that list. We see our patients who have little tendency to periodontoclasia every four months; those with a greater tendency, every three months. We see some every two months, and a few every month. The majority are on the three months' list. Most of our patients can be reached by telephone, and the assistant calls up and makes the appointments. Other methods seem to work out very successfully with other periodontists, but this is the method that we have found most satisfactory.

Perhaps something might be said relative to the system used in taking care of the prophylactic list. When a patient's name is to go on this list, we enter in red ink in the remark column of the patient's chart. "Every 3 m. 20″ G" meaning that they are to be telephoned every three months and given a twenty minute appointment with Dr. G. The assistant makes out a prophylactic card bearing the patient's name, telephone number and all necessary data, writing in the remark column of the chart, in red ink, March (1) or March (2), indicating that the prophylactic card has been filed in the prophylactic drawer in the first half or second half of March. She then initials the entry. This record permits of quickly locating this prophylactic card if for any reason it is needed. The prophylactic cards are filed ahead either into the first half of the month or the second half, a blue alphabetical index being used for the first half and a brown index for the second half in each month. To have an exact and accurate system of keeping track of these patients as the list becomes larger is very essential.

Conclusion

One might suggest that anything that will thoroughly impress the patient with the importance of preventive dentistry is greatly to be desired. A neatly printed card that can be read at a distance of, say, 6 feet, framed or mounted on a small stand and placed in a suitable position in the operating room, serves this purpose in part. This card can be changed from time to time. We are using a card at present with these words "Preventive dentistry is less expensive and infinitely more valuable than reparative dentistry." We would suggest such sentences as "Dental prophylaxis stands today as the most practical means of controlling dental decay that has yet been suggested" or "What is the roentgen-ray picture of your child's mouth going to be when he is 21?" or "We must bring a higher percentage of children through to adult life with a full complement of teeth having vital pulps and with healthy gums," or "How to prevent dental decay: 1. Better training. 2. Regular prophylaxis. 3. Rational diet."

Discussion of the Symposium on Periodontia Practice

Louise C. Ball, New York City: Preventive periodontology is surely the fundamental structure of general dental practice, and not a logical specialty. I agree with Dr. Merritt and Dr. Stillman that care of advanced cases as a specialty should be elected only after a well rounded experience in general dentistry, for careful diagnosis cannot be based on theoretical deductions.

About twelve years ago, dental students were required to do only "ten cleanings," as they were called, to fulfil the clinic requirements for graduation. The "cleaning" usually meant using an Abbott's wheel with plenty of pumice whirled around by a dental engine.

Pyorrhea was not treated in the school clinic. Graduate dentists, with this ridiculously limited clinic practice while at college, are hardly equipped to diagnose and practice even preventive periodontia. The state dental

examining board sets the goal for the students by giving rigid examinations both in theory and practice of the art of dentistry. I should like to add to Dr. Merritt's suggestion that in addition an educational bulletin be prepared for all state examining boards, urging them to place the weight of the credits on obligatory questions on each paper on the art of dentistry that will reflect the amount of education received in periodontology during the college course.

This would force the colleges properly to prepare the students beginning with the freshman year, thus laying the cornerstone of dentistry, preventive periodontology.

Unfortunately, most students in college, study to pass examinations, and so the colleges and state examining boards set the pace.

In 1917, when I conducted the New York Municipal Civil Service Examination for dental hygienists, and in 1918 for dentists in the public schools, it was astonishing to find that the dental hygienists showed the broader knowledge of periodontology. In 1917, Dr. Wright told me that, in the first dental hygiene examination in New York City, the eighty girls finishing the first course at Columbia University had far outstripped the dental candidates of that year although both groups had been given the same questions. The girls answered the questions on periodontology more correctly and with greater detail. This was surely because they had the advantage over the dental students, since they had had lectures from Drs. Adair, Cross, Merritt, and Stillman, and also from Doctor W. J. Gies.

So, I would suggest that the dental colleges can offer their students no better inspiration than to invite successful experienced periodontists to set the goal for the undergraduate students by giving lectures and clinics.

Dr. Stillman speaks of the attitude of certain dentists against including preventive periodontia in general practice. This should be regarded by dentists as a duty to each patient, and not a matter of personal choice.

Dr. Garvin has touched on the psychology of the patient, but we may also add that it is important to consider the psychology of the dentist. Some men in general practice appear to lack vision, and can do and think of but one thing at a time.

It is this dentist who puts in a restoration and soon needs to send his patient to a periodontist, perhaps not realizing that he himself is responsible for the alveolar osteoclasia present; and he it is also who sees ten new cavities, removes the caries from only one and repairs it, proceeding to the next and then the next, and by the time he reaches the tenth, the pulp is probably affected.

Dr. Stillman further thinks that the periodontist is the logical link between the medical and dental professions. The service of the periodontist lies in the fact that he usually has at least a mind trained in observation and usually an inborn ability for diagnosis. This trained judgment is supplemented by ability to read roentgenograms correctly.

But I differ with Dr. Stillman in that I believe the physician really needs in consultation a physician who is also a responsible periodontist, preferably in general practice. There are few physicians at present who can fill these requirements.

The colleges are leaning more and more toward training the dentist as a specialist in medicine, just as an oculist is trained.

This is a procedure I should favor when the physician needs consultation about the teeth. The medical internist shall call in a recognized dental diagnostician, who in turn shall confer with the family dentist, and then, after a consultation, the diagnostician shall render his findings to the physician, including the entire history of the patient as received from the family dentist. This would avoid embarrassment all around.

The children in the schools might be told what a dentist will do for them and a statement be made to define the ideal preventive periodontic treatment. Medical colleges should also encourage some of their undergraduates to elect dentistry as a specialty, and for this purpose, there should be a competent periodontist on the faculty of every medical college to give the medical students a course in clinical and theoretical periodontology in its broadest sense. Surely, there is just as great a necessity to include dental diagnosis in the medical education as for the dentist to study medical diagnosis.

This Academy has changed the attitude of many dentists toward general practice, and I visualize the future general dental practitioner functioning as does the medical internist of today. Dr. Garvin has outlined the handling of a fine general dental practice, applying the principles of preventive periodontology to all branches of his art, not forgetting to call his medical confréres to assist in clearing up systemic disturbances. Such an ideal dentist might well be called a dental physician.

I agree with Dr. Schott that the dental hygienist loses prestige with the patients if she is also an office assistant. In addition, she can hardly attend to both duties successfully.

Dr. Schott is right in saying that the dentist should know more about the practice of preventive periodontia than his hygienist, and I may add that he shall have had considerable experience himself.

The dentist should O.K. the work of his hygienist in every instance. This gives the patient confidence. Without the after inspection of the dentist, I believe that the greatest

value of this work is lost. Any suggestions for improvement might be made to the dental hygienist at another time.

Dean Millberry of California wrote me that his school for training dental hygienists has increased the course to two years, which will give the girls the necessary longer clinic experience.

Dr. Rich is to be congratulated in having so fertile a field for preventive periodontology for mothers, children and welfare workers.

Dr. Garvin has done well to emphasize the importance to the dentist of keeping himself in good general health. The new course of study in the dental colleges could foster this idea by adding a gymnasium teacher to the staff and making a certain number of hours a week of physical training obligatory. A gymnasium and swimming pool ought to be in every dental college building for this purpose. An instructor in physical training could warn students not to work over a patient if he has a cold or if the patient has one; and he could also give corrective exercises for bad posture habits.

I should like to add special emphasis to Dr. Garvin's insistence on careful follow-up work, supervising the care of the mouth at home, and on frequent removal of all bacterial-mucinate scum, and lastly on the regular return to the periodontist for short appointments for preventive periodontia.

Harold J. Leonard, Minneapolis, Minn: With Dr. Merritt's paper, there would seem no grounds for disagreement. I had hoped he would stress the methods which have proved successful in the practice of periodontia in building up a practice which is remunerative, without making use of all sorts of hocum to impress patients. I believe we as an Academy need to stress the fact that elaborate apparatus and involved complicated technic, used solely for its financial psychologic effect on the patient, is a form of crime on a par with the gold brick traffic. Yet, up until the last decade, there were few men indeed who did not use such methods in their treatment of periodontia cases. The idea was to impress the patient with the mysterious treatment and thereby extract a larger fee. The Academy has set its face against this sort of thing, thereby raising periodontia to a respected branch of dentistry. But there is still room for much educational work through our papers going out to the profession to help in this respect. For while the leaders in periodontia are certainly fine professional men and women, there is much work still being done that savors of charlatanism.

With Dr. Merritt's idea that the bulletin committee should prepare a bulletin on "Periodontia as the Foundation Subject of Dentistry" for dental students and practitioners, I heartily agree. It seems a pity that but one modern textbook on periodontia is on the market, and it is really one for specialists and hardly brings home the point Dr. Merritt makes. I have just proposed in the bulletins committee that we prepare a text for dental college use. I am not sure how far we are willing to go with these bulletins. I am afraid my loyalty to the Academy would be stretched if I were asked to write a text on such a large subject or even a large share of such a text and have it put out without any authors' names affixed.

With Dr. Schott's paper, I find myself in agreement. The dental hygienist's first place is in school and institutional work, where educational work and preventive work will bring big returns. Only as there is a surplus should they be available for dental offices. And it is only in the exceptional office that the dental hygienist can be employed successfully. If she is employed purely as a moneymaker in an office, it were better that we have no such person. Where she is employed to extend the service a dentist can render over a larger number of people, she is of real value. How to control this is a question of law, but it seems to me the more we can make the dentist responsible for the work of any hygienist in his employ, the better. I am not in favor of the independent practice of a dental hygienist even if nominally under the wing of some one or more dentists.

With a more rigid fixing on dentists, of responsibility for their work, it would seem that the line of their prescribed duties might be loosened a little. I am convinced that any attempt to set a line about a tooth beyond which the hygienist may not go in instrumentation is impractical. Either she will break the law or she will fail to give the service which she might render. There are countless children with subgingival deposits about the lower anterior teeth that will not be treated for the condition if she does not do it. It is foolish to send such patients to the dentists for the ten minutes' work which such an area might require. She gets much more training in her school work on the removal of deposits than the dental students get. The average dentist does not go beneath the gingiva for deposits even though legally entitled to do so. The dental hygienist can do the apoxesis for the average beginning case and for the good of the people to be served she should not be hindered from doing so.

Then again, why should she not do the simple surgical dressing and washing work for the dental surgeon that the nurse does for the surgeon? She can wash out the débris from sockets and watch the routine follow up on surgical work as well as the busy practitioner

can. When an unusual condition requires it, the oral surgeon is, of course, called. In the University of Minnesota, we have a dental department of the students' health service, employing nine part-time operative dentists, an oral surgeon and periodontist, a dental hygienist and two assistants. The dental hygienist makes the preliminary examination of all patients that come in, does the prophylactic work and sees the routine follow-up work in oral surgery. It is undoubtedly stretching the exact wording of the law, but it is the only economical scheme, and it works very well. If anything goes wrong with the follow-up work, the surgeon knows about it. It is his case and he is going to see to it that his hygienist makes no mistakes.

I feel as Dr. Schott does that two academic years of work in a university is none too much for a worker who has the broad teaching duties as well as skilled technic to perform. Minnesota and California now have two-year courses. Tennessee University expects to and Forsyth Dental Infirmary probably will next year.

The solution of periodontia service is hard. There is no way of taking care of the vast number of advanced cases in the older generation. We can only attack this problem as Dr. Rich suggests by damming the flood at its source. Whether prophylactic treatments to all children in the schools will ultimately be found to be the solution, I do not know. I hope the time will soon come when we will be able to teach methods of eating and living that give assurance of freedom from dental disease. I believe the way lies along this line more than that of universal dental prophylaxis. However, prophylaxis is a practical method at hand and a proper dietary is still a matter of heated argument, so we must perforce do what we can with the tools available. It is certainly true that, with universal prophylaxis and oral hygiene teaching and follow-up in the schools, periodontal disease as well as dental caries can be largely eliminated. The practical thing is to extend this work until it is universal for children and add to this our teaching on right living as we get the facts to teach. In this way we can serve the poor of the next generation even though we must despair of doing much for this one.

Dr. Garvin has written an excellent paper on just the line desired. His suggestions cannot but be helpful to the men in this line of work.

In a paper read by Dr. Frederick A. Bricker before the Minneapolis District Dental Society, the subject was presented with many practical suggestions for success in practice and two outstanding points were made. The first was that he now spends 80 per cent of his time with the patient in instructional and educational work and 20 per cent on examination and instrumentation. The second was the use of a diagnosis sheet, which he makes out with carbon copy. The latter he gives to the patient. He stresses the psychologic aspect of "selling" the patient, if one may use this term in this connection. He wishes to "attract attention, arouse interest, create desire which terminates in action."

Dr. Stillman stresses the point made by Dr. Merritt that periodontology is one of the fundamental bases of dentistry. He hopes that the curriculum of the colleges of dentistry will be modified to put this conception into execution. I am pleased to report that there is a body in the American Association of Dental schools that is working for this. I feel sure that, with the new era dawning for dental education as the Carnegie Study Plan comes out and their follow-up work begins, this new conception of dentistry will have a more favorable showing.

DENTAL EDUCATION

By A. W. THORNTON, D.D.S., Montreal, Canada

(Read Before the Canadian National Dental Association, Vancouver, British Columbia, August 4-7, 1924)

THE word "educate" meant primarily "to bring up a child." The noun "education" means the act or process of educating. Another definition might be given: The result of educating in knowledge, skill or discipline of character acquired. A further definition might be given: The act or process of "training, by a prescribed course of study or discipline; and, in this sense, we use the phrase "educated for the bar," "educated for the pulpit," "educated for medicine." Recalling the etymology of the word, we determine that education means strictly to draw or lead forth or out.

Education is not so much the communication of knowledge as the discipline of the intellect, the establishment of principles, and the regulation of the emotions.

It is well, perhaps, to keep some of these definitions in mind, lest the common conception of education, "an accumulation of facts more or less isolated," drive the true idea of education out of our minds.

Some years ago, a dental student in British Columbia asked the court of that province to issue a mandamus, to compel the dental board of the province to grant him a license to practice dentistry. Certain well-known Canadian dentists gave evidence in the case. The student failed in his effort to get the court to issue any such order. It transpired afterward that the student knew practically nothing about dentistry, and had prepared himself for his written examination almost solely from a quiz compendium. This man possessed practically no education, in the true sense of the word. He had simply learned to use certain words in answer to certain questions. In several instances, he did not know the meaning of the words he had used in his answers.

The provincial legislature of the Province of Ontario, by special act, compelled the licensing body of that province to grant a license to an applicant after two sessions in college. This applicant had spent some years in a very ordinary private dental office, but he could hardly read, or write his own name. In this case, the members of the legislature failed to realize that in the true sense of the word, the man had practically no education. He had learned to do, with his hands and fingers, certain mechanical acts. There was no mental discipline, nothing whatever that could have helped him to apprehend or appreciate moral issues. These instances are given, simply to illustrate the idea, that even some legislators, otherwise fairly intelligent men, have in regard to dental education.

However, notwithstanding, anything or everything that persons outside the profession may say or think, there is no gainsaying the fact that every man

interested in any way in dental education realizes that we are at the present time face to face with a serious problem, and one difficult of solution. We are about in the position of the young couple who settle down in a comfortable little home, which for a time is adequate for their comfort, and then later wake up to the fact that, while the family has grown larger, the house has failed to develop to accommodate the growing family. Some change or growth, or addition, becomes an absolute necessity.

Needed Changes in Preparation for a Degree

So it is with dental education. Some change or growth, or addition, in time spent, and in subjects covered, in preparation for a degree and license to practice becomes an absolute necessity.

The fact is, in the dental faculties of the universities of the United States and Canada, the curriculums have been added to and enlarged to such an extent that, in a good many of the subjects that our students are compelled to take, an old phrase would appear to be exceedingly applicable: they are "Jacks of all trades and masters of none."

I trust you will not misunderstand me. I am not blind to the fact that our recent graduates know a great many things, in part, and some things fairly well. Their foundation covers a large area, but the imposed superstructure is in many respects lacking both in extent and in architectural beauty. The history of dentistry during the past twenty-five years has made any other result impossible.

Permit me by way of illustration to draw your attention to an item in a recent issue of *Cosmos*, an original communication entitled "The All Porcelain Jacket Crown, by the Indirect Method." The description of the technic of this form of restoration requires thirteen pages and at least thirty-five illustrations, to convey the technician's idea. We all know that where indicated this form of restoration is very beautiful.

In the same issue, there is an article by Dr. Henry Wasserman entitled, "Pinledge Bridge Attachment, for Anterior Teeth," which requires seven pages of text and thirty-seven illustrative cuts for presentation of the technic involved in making this one form of abutment. Let me say in passing that I have seen Dr. Wasserman's clinic, and it is one of the most efficient I have ever seen.

My object in drawing attention to these two cases is to direct your minds in passing to the time required for proficiency in these operations, when you multiply them by the hundred.

Various Phases of Problem

Have I said enough in these few opening sentences to suggest one important phase of this all important question, the immensity of the problem with which we are dealing? Will you permit me to suggest some of the angles from which this question must be viewed and studied?

First, there is the question of the need of dental service by almost the entire population of every civilized country. How is it humanly possible to provide for and render the dental service needed by practically every man, woman and child constituting the great body commonly known and spoken of as "the people"?

A great army of dentists is necessary for this service. Is it possible greatly to increase the number of students in our dental colleges and in the dental faculties of our universities? Our students now are leaving our dental schools burdened with debt, and very few after graduation make more than a comfortable living. What will be the result if

the standard of matriculation is materially raised and the time of college training materially lengthened?

I believe that many of our best prospective students will seek some other vocation, and dentistry in this country will pass into the hands of men whose commercial instincts are developed at the expense of every moral attribute. At a recent meeting of medical men, the commercializing of the medical profession was freely discussed. This commercializing process was being brought about by "splitting fees" or a percentage of "rake off" for patients referred by one physician to another.

I was invited a short time ago to go to a large city to discuss, before the local society, the question of professional ethics. When I was invited to go to the meeting, mention was made of the fact that groups of dental specialists were to be found in certain buildings, and patients were referred from one to the other, not altogether for the good of the patient, but rather for the the financial advantage of the so-called specialists. I am persuaded that the excessive cost of professional education compels many a young graduate to do some things in practice, at which his very soul revolts.

Attention has been drawn times without number to the marvelous development of dentistry during the last fifteen or twenty years. Subject after subject has been added to the curriculum, until today, in many universities, dental students are the hardest worked of all students attending the university. The result is that our students are, to a considerable extent, unable to benefit as largely as other students, from the cultural advantages of university life. This is a condition much to be deplored. If a lawyer after graduation can talk only of cases and courts, or a physician only of sickness and surgery, or a dentist only of oralology or differential diagnosis, our universities have not a great deal of reason to be proud of their output. Above everything else, let us try to send out cultured men, and if we do this, there will be no lack of "recognition" of which we now hear so frequently.

But, in this age of wonderful scientific advancement, university men must be more than cultured gentlemen, able to discuss intelligently the questions of the day, or feel at ease in a drawing room. Service, maximum efficiency, is expected and demanded of all liberally educated men and women. Scientific advancement and mechanical ingenuity, make possible today in medicine and dentistry a standard of service, undreamed of twenty years ago. Our ability to serve must be commensurate with the necessities of suffering humanity.

The Specialist

But I need not remind you that dentistry and medicine have grown so large that no one person may hope to become proficient in all branches of either profession. Necessity has forced on us the division of professional life into various so-called specialists. We hear the use of the word "specialist" so frequently that perhaps it would be well to define the word in order that we may have a common understanding of what we mean by a specialist. A specialist is "one who devotes himself to a special or particular branch of a profession, art, or science; one who has studied and acquired a special knowledge of, or skill in, some particular subject."

You will see then that when we use the word "specialty," we have in our minds a dual thought; first, a common course of instruction, taken by all students of a certain class, and, second, a special course of instruction or study taken by a person who is anxious to give

special study to and acquire special knowledge of some particular branch of a subject.

The special study should, of course, follow the common or ordinary course, obligatory on all students of the particular college.

There is another question that comes to mind as we think of this question of professional training: the time spent in preparation. The general practitioner spends the time necessary to obtain ordinary knowledge and skill; the specialist spends the same length of time as the general practitioner plus the time necessary to obtain special knowledge and skill. In ordinary life, a man is paid for the time spent in rendering any service, the skill displayed and the result obtained. The same is true in professional life. Because this fact is universally recognized, the specialist does, and should, receive higher remuneration for service rendered, than does the general practitioner.

We hear very frequently the expression "dentistry is a specialty of medicine." Of course, the statement is not true. If dentistry is a specialty of medicine, then all dentists are medical specialists. But a specialist in any branch of medicine must be a graduate in medicine. This of necessity shuts out the dentist as a medical specialist. What is true is this: there are a good many things common to both medicine and dentistry. Both are concerned with diseased conditions of the human body and the treatment of such diseased conditions.

A physician might be engaged in a case of obstetrics one hour, and in the extraction of teeth the next hour, and he would be within his legal rights in both cases. A dentist might be extracting teeth one hour, and inserting a denture the next hour, and he would be within his legal rights.

The common subject was surgery, in the extraction of the teeth; but the physician could not legally insert a denture, nor could the dentist legally attend to the case of obstetrics. There are legal limitations to both professions, but as medicine is much the older of the two professions, there are very few limitations placed on the nature or extent of the service a physician may choose to attempt to render.

On the other hand, dentistry is a comparatively young profession. Dental jurisprudence is fairly well established, and restricts the dentist to well defined areas and operations. Can the practice of dentistry be materially enlarged without encroaching on the rights and privileges for ages looked on as belonging solely to the medical profession?

Various Suggestions Regarding Extent of Training

This difficulty has been recognized by many men engaged in dental education, and many suggestions have been made as to the best manner of dealing with the situation. As one solution of the question, it is suggested by many persons that all dentists be graduates in medicine also. If those who advocate this mean that a student, in order to prepare himself to practice dentistry, must cover the work now covered by students in medicine, there is just one answer to be made: "It can't be done." To attempt it would be a criminal waste of money and man's allotted span of life. If, on the other hand, some eclectic system could be devised whereby certain subjects might be selected and credit given for these, in lieu of some other subjects, perhaps some course might be patched up; but the physician graduating after such a course would be a very much poorer physician, and the dentist would be an infinitely poorer dentist. I am, of course, using the words "dentist" and "physician" in the commonly accepted meaning of these words.

Another suggestion frequently made

is that less time be given to the mechanical side of dentistry, that is, prosthetic dentistry, in its most comprehensive sense, and that the time so saved be given to some of the so-called medical subjects. We must recognize, however, that the great majority of our dental graduates are going to be what is generally spoken of as general practitioners, and do reparative or restorative work. Will anyone say that, for such men, too much time is being given to the work at which they will spend all their lives?

On the other hand, if a man is going to do oral surgery, in the highest and best sense of the word, then it would seem that a great portion of the time now spent in acquiring a knowledge of operative and prosthetic procedure would be better spent in the study of anatomy, histology, pathology and surgical technic. When Riggs drew attention to the pathologic conditions afterwards known as "Riggs' disease", when Brophy and Garretson, and Gilmer showed what oral surgery, in the highest and best meaning of the words, really meant; when Hunter in Montreal drew attention to oral sepsis and its relation to systemic conditions; when Mayo threw his challenge to the the entire dental profession, latent energies were awakened, forces were set in motion, ambitions were stimulated and college courses were changed or modified; and today we are trying to gather in the harvest from seeds sown by these great men, these world benefactors.

When Black laid the world under tribute by his incomparable contributions to the world at large, but more particularly to dental education in this western hemisphere, forces were set in motion which today we are trying to direct in such a way that credit will accrue to every man in the dental profession and untold blessing reach many of the world's sufferers.

The profession of dentistry owes a debt of gratitude that can never be repaid to the men who did the pioneer work and made possible the process of evolution that has produced the institution now comprised by the single word "dentistry." In this evolution the Western Hemisphere has played no small part, but one unfortunate condition has been handed down from generation to generation. The separation of dentistry from medicine, perhaps unavoidable, and the establishment of separate educational institutions has wrought untold mischief to both professions. But perhaps the greatest mishap was the lack of general hospital training for students about to practice dentistry. Because of this lack, dental students and medical students, dental graduates and medical graduates failed to recognize the many things which they possessed in common.

Those of us in dental education work have a great task to perform, a great and difficult problem to solve. To the greatest extent possible, every subject, taught in an institution of learning, should be taught by, and in, the department best equipped for such teaching. Anatomy should be taught to medical and dental students in the same department and by the same instructors. The same is true of such subjects as embryology, histology, pathology, metallurgy, physics, chemistry—everything common to both callings. When it comes to the practical application of their training, this too should be done in the same hospital or hospitals. In no other way is it possible for the graduates of one profession to become acquainted with, and to appreciate and respect the training and work of the other. This does not, of course, imply that students in medicine and students in dentistry should always do the same work in subjects common to both courses. Regional differences, of course, demand that greater

or less emphasis be laid on certain parts of a subject. A student in dentistry, should have a working knowledge of the anatomy of the whole body, but he should have a very particular knowledge of the anatomy of the head and face and neck, a knowledge much greater in detail than the student who is going to practice general medicine.

The practical work of both medical and dental students should be done in the same hospital. In no other way is it possible to establish in the mind of each class a knowledge of and respect for the work of the other. In no other way is it possible for the student of either class to see the interrelationship of pathologic conditions or the necessity of collaboration in the treatment of many of these conditions.

Not the possession of a certain university degree, but the extent of knowledge, and skill in the application of that knowledge, will determine the extent of a man's usefulness and appreciation by his fellow men.

The question as to whether dentists should be graduates in medicine raises some interesting possibilities for discussion. It is undeniable that dentistry is one branch of the healing art, but whether or not it should be classed as a medical specialty such as ophthalmology or gynecology, I am not prepared to say. Many arguments might be adduced for both sides of the case.

Every day, dentistry assumes more and more of a medical and scientific character. I take it for granted that the highest possible standard of education is none too good for the members of the dental profession, and it seems to me today that the average dentist is seriously lacking in matters that should be of common knowledge to everyone who attempts to treat the sick.

Certainly, the average man who has not enjoyed the benefit of a hospital training is not prepared to recognize, diagnose and treat the manifold diseases that present oral manifestations. It is not desirable that he should treat some of them; but certainly there is no gainsaying the fact that he should be able to recognize them.

I, therefore, hold it true that we, as dentists, have not the knowledge of the body in general in both physiologic and pathologic conditions that we should have. An increase in our knowledge of histology, anatomy, physiology, pathology, rhinology, laryngology, ophthalmology and otology—the last four particularly is most desirable.

How this is to be brought about, I do not know. Our course in dentistry, already one of five years, provides none too much time to acquire the mental and technical equipment that is now regarded as essential. It imposes an almost intolerable burden on the parents of our students, or on the few students who still find it possible to finance their own college course. To lengthen it by the years necessary to complete a course in medicine seems impossible.

The nature of the change to be brought about is a problem; but I see some light in a plan that was proposed some years ago as a means of lessening the time to be spent in graduate work in hospitals by medical graduates. Briefly outlined, it is as follows: To make the first three years common to all students (this to be extended to include dental students as well), and during these three years to teach the fundamentals: anatomy, chemistry, histology, bacteriology, pathology and the other allied subjects. Then, at the end of the third year, the student elects his specialty, whether internal medicine, surgery, obstetrics, orthopedics, pediatrics, urology, dentistry or whatever he wishes; and the balance of his college course is spent in the study of his particular speciality, and the subjects necessary to a knowledge

of that specialty. This would probably require about three years, making six years in all; but, at the end of the six years, a man should be adequately prepared to practice one branch of the healing art.

The proposition further suggested the degree to be granted and either the degree of doctor, or bachelor, of medical science (surgery) or bachelor of medical science (stomatology) and so on, was suggested. I realize that this plan has its disadvantages, but it would, I believe, train a man adequately in six years at the outside, and would permit the concentration of the student's energies on his future lifework.

It is, perhaps, unnecessary to point out that dental students spend four years in college studying part of the first 3 inches of the alimentary canal, and are legally qualified to practice dentistry. The medical student spends six years in the study of the entire body and is legally qualified to treat all the ills to which human flesh is heir. But, and the point is important, 999 out of every thousand dental students go straight from the benediction of the college president to an office that he has already equipped.

The overwhelming majority of medical students, on graduation, seek admittance to some hospital or other, where they may supplement with a year or so's work the knowledge gained in the halls of their college. Many of the men spend several years in this graduate work before going into private practice. But who will say that they are not better prepared to take care of the health of their patients than the dentist fresh from his Alma Mater?

At the present time, I believe our dental course should be curtailed in some regards. Metallurgy, for example, is a perfectly useless subject. Fifty years ago, it was essential. Today all the metallurgy necessary can be, and is, taught by the professor of prosthetic dentistry. The same applies to organic chemistry. Fifty years ago, it was necessary to know the methods of preparation and purification of nitrous oxid. Today, large manufacturing companies make our gas for us better than we ever did. Let us prune the course of unnecessary subjects and devote the time gained to essentials.

INTRA-ORAL RADICAL ANTRUM OPERATION

By MENIFEE R. HOWARD, D.D.S., Denver, Colorado

(Read before the American Society of Oral Surgeons and Exodontists, Cleveland, Ohio, September 5-8, 1923)

IT will be my purpose in this paper to present the technic of an intra-oral radical antrum operation, with illustrations showing the flap methods of closure in simple and difficult cases. As a preliminary, I shall give a few general points and diagnostic factors concerning the antrum.

The antrum of Highmore is the largest of the accessory sinuses and the one most frequently infected. It is connected functionally with the nose. Anatomically, it is closely associated with and often infected from the superior teeth. It is common ground for treatment between the rhinologist and the oral surgeon. The antrum is lined with a wavy, ciliated columnar epithelium, whose function it is to carry out the mucous secretions through the ostium maxillaire into the middle meatus of the nose.

The causative factors in diseases of the antrum come principally from the nose and mouth. Infections from the mouth develop for the most part, at the roots of pulpless teeth. According to various writers, from 50 to 75 per cent of antrum infections originate in the mouth. It has been my observation that, of 200 cases of known infection, only two showed no devitalized or missing teeth on the affected side. Therefore, if there are missing or devitalized teeth on the side presenting antral infection, it is reasonable to believe that the infection came from the teeth.

The diagnosis of the antrum disease is made from local symptoms, transillumination, roentgen-ray examination and puncture. Many cases of antral infection exist where there are no local symptoms, the only disturbance being a focus of infection.

There are two common routes for operating on the antrum—the intranasal, through the nasal wall, and the intra-oral, through the canine fossae or the alveolar process.

Generally, it would seem desirable that the antrum be treated by the rhinologist when the infection is of nasal origin and by the oral surgeon when it originates in the mouth. Very often an antrum is treated unsuccessfully through the nose by the rhinologist, when a devitalized tooth is the causative factor and the extraction of this tooth with curettage and antral drainage through the mouth effects a cure.

Many cases will be controlled by puncture and drainage through the alveolus, but should suppuration continue after from two to four weeks, it is evident that this procedure is not sufficient. The next step is a radical antrum operation.

The operation described herewith combines the canine and the alveolar method, and affords an inspection of the antral cavity that will permit the removal of foreign bodies, roots of teeth, sequestra, and necrotic or polypoid tissue within the cavity or adjacent structures.

Thorough sterilization is carried out in the technic of the operation.

A horizontal incision is made above the cuspid tooth in the buccal gingival mucosa, extending posteriorly to the buccal mucosa at the tuberosity, and re-

flecting lingually in its course in accordance with the case (Fig. 1). This tissue, with its periosteum, is reflected with a wide periosteotome, exposing the buccal process and the anterior and lateral wall of the antrum. The process and bone is removed with a chisel or rongeur, exposing the mucosa of the maxillary sinus (Fig. 2).

If the mucosa of the antrum at the point of opening is not degenerated, a straight incision should be made, the

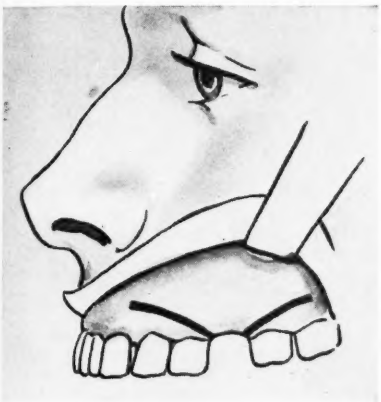


Fig. 1.—Incision for intraoral radical antrum operation.

Fig. 2.—Mucoperiostuem retracted exposing opening made into the sinus.

mucosa retracted and a diagnostic lamp introduced for inspection. However, if the mucosa is degenerated, its removal is necessary.

No edematous mucous membrane that has not undergone polypoid or granulative degeneration should be removed, as it usually resumes its normal functioning after treatment. When the mucosa is completely removed, the ciliated epithelial cells do not generate, and the antrum later will be covered by a thick fibrous tissue. It is, therefore, important not to destroy or remove more than necessary.

Considerable care should be exercised that every part of the antrum be observed, as only a small particle of diseased tissue may cause a continuance of the disturbance. Care should be taken not to employ surgery unnecessarily. The less the tissues are traumatized, the less the chisels or curets are used, the better. The suction machine produces less trauma in controlling hemorrhage than does gauze.

After smoothing all rough edges of bone and process, and after again making a thorough inspection, the operator can proceed to close. Should the mucosa of the antrum at the point of incision be healthy and the antrum free from pus or infection, one or two sutures in the mucosa with absorbable material will help to make a more perfect closure. Then the edges of the incision within the mouth are brought together and completely sutured with no necessity for after drainage or irrigation (Figs. 3-4).

Should there be pus or any infection within the antrum, the antral mucosa is not sutured. The sutures used within the mouth, however, are the same except that one suture is absent at the pendent point for drainage or irrigation. The process is often destroyed at this point,

offering a favorable location. This point, if properly made, will present a valve-like opening which, with a slight pressure, will permit drainage or irrigation for three or four weeks without allowing the secretions of the mouth to enter the antrum. When it is free of infection, it will close of its own accord. No packing is used within the cavity.

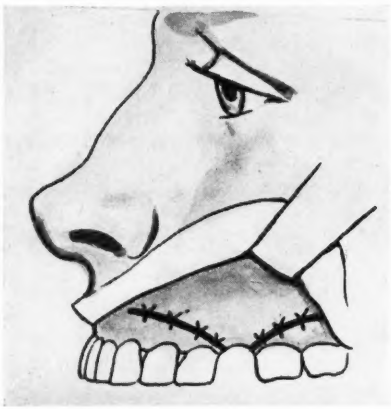


Fig. 3.—Sutures in position.

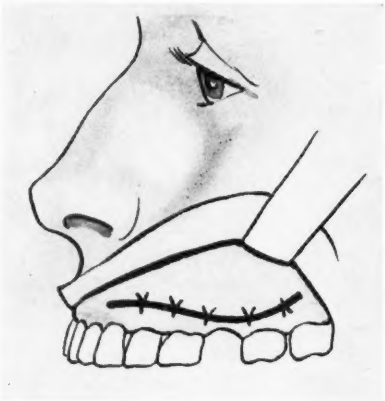


Fig. 4.—Sutures in position with a variation in outline of preceding operation.

In edentulous cases, when there is reason to believe the process, bone or mucosa is thin or weak on the ridge or buccal surface, the incision is extended over the ridge onto the lingual surface (Fig. 5). By making the flap in heavier tissue, the possibilities of a slough or lack of healing are obviated.

In all of these operations, the nasal wall and membrane are left intact, but should there be necrosis of the nasal wall, the part affected is removed, but the membranous part with its ostium is not disturbed. The interrupted silk or dermal suture is used, and is removed in from three to five days. Nerve blocking by procain is the anesthesia of choice in this operation, and the second division is preferable.

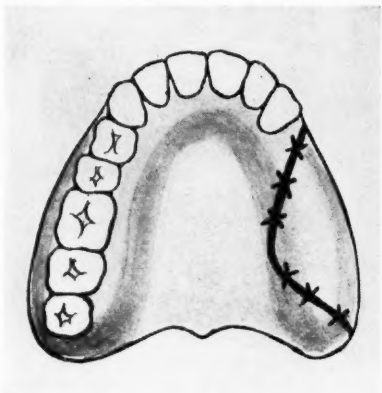


Fig. 5.—Incision extended lingually, one suture being absent.

The armamentarium used in the operation consists, in part, of a lip retractor of individual design, a lance, wide retractor, chisel, curets, rongeurs, small tonsil forceps, a suction machine and diagnostic lamps (Figs. 6-7).

I began to employ this type of operation several years ago and demonstrated the results of a case at a midwinter clinic in Denver in December, 1919, which presented the following history:

Report of Case

W. E., a farmer, aged 37, weight 135 pounds, who was extremely nervous, suffered from mitral regurgitation and tired very easily, had first molar roots extending into left antrum removed, June 7, 1919. The antrum was drained until October 1, when an intra-oral radical antrum operation was performed and polypi and necrotic bone were removed. November 1, the antrum was free of pus. The patient gained 28 pounds in thirty-one days. Since that time, he has "felt like a different man," and his nervousness is almost entirely gone. The heart lesion will probably continue through life, but may inconvenience him but little.

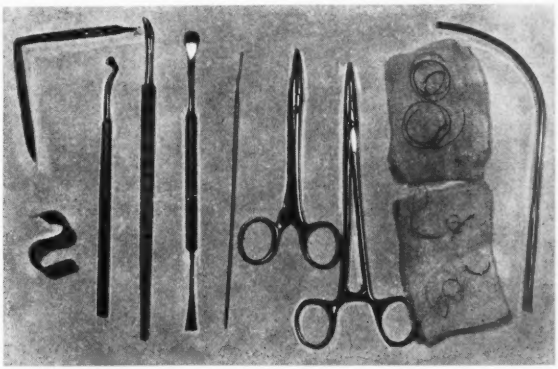


Fig. 6.—Instruments used: lancets, retractors, probe, hemostats, needles.

Technic of Flap Closure

Flap methods for closure of openings, large or small, may be made as follows: (These may be done at the same time as the intra-oral radical antrum operation or separately to suit the needs of the case.)

Flap Closure 1 consists of the simple closure when the opening is small and one tooth socket is involved (Fig. 8). Four oblique incisions are made, two on the buccal and two on the lingual. The gum tissue and mucous membrane are

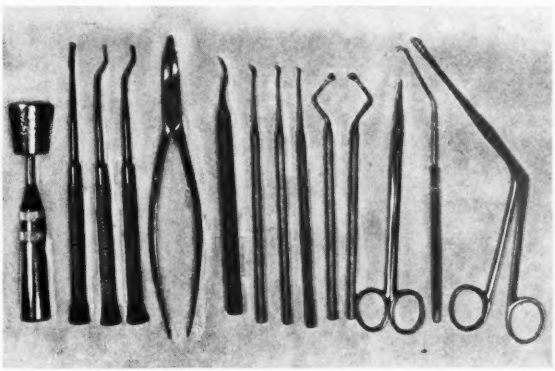


Fig. 7.—Instruments used: mallet, chisels, rongeur, curets, forceps.

retracted, the edges at the opening being freshened and brought together as shown in Figure 9.

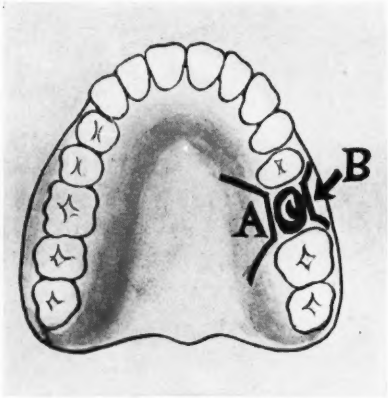


Fig. 8.—Flap Closure 1: *C*, opening into the antrum; *A* and *B*, tissue retracted.

Flap Closure 2, a double flap closure, is indicated in edentulous cases or when

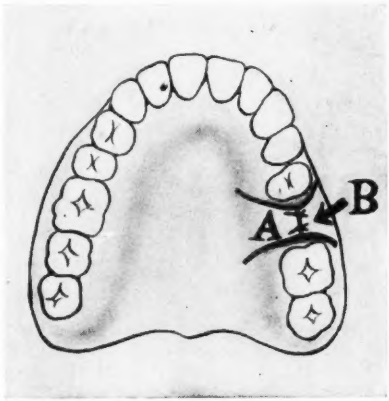


Fig. 9.—Flap Closure 1: Closure with two stitches.

most of the teeth are missing distal to the cuspid tooth. The opening is usually at the first or second molar. An incision is made on the ridge distal to the cuspid and extending distally, freshening the opening on both sides and terminating at the tuberosity. A transverse lingual incision is made near the median line almost parallel to the other incision (Fig. 10). A periosteotome is introduced under the periosteum and it is separated from the bone, leaving the ends attached. The middle portion of the flap is pressed over *en masse* and sutured to the outer flap. Owing to the transverse or oblique incision, none of the palate bone is exposed. The median

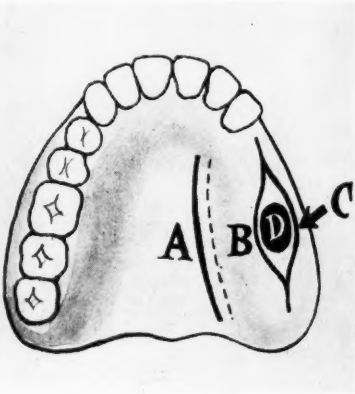


Fig. 10.—Flap Closure 2: *D*, opening into the antrum; *B*, the tissue retracted.

incision is sutured lightly with one or two sutures (Fig. 11). This closure, which will take care of the openings of moderate size is, because of the double end, satisfactory in certain cases.

Flap Closure 3, a modification of Closure 2 (Fig. 12), is a single flap operation with the transverse incision extending in a circular manner with all the tissues retracted except the posterior fragment, which permits of its being rotated slightly into place and sutured (Fig. 13). This method is very satisfactory for closure of large openings within the antrum.

In all of these intra-oral antrum oper-

ations, care should be exercised to make little or no tension on the flap, otherwise a slough is liable to occur.

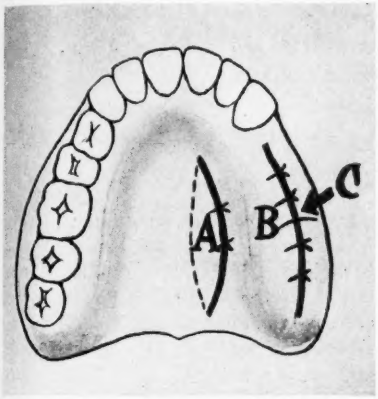


Fig. 11.—Flap Closure 2: After operation, with stitches in position; *A*, thin tissue left after oblique incision.

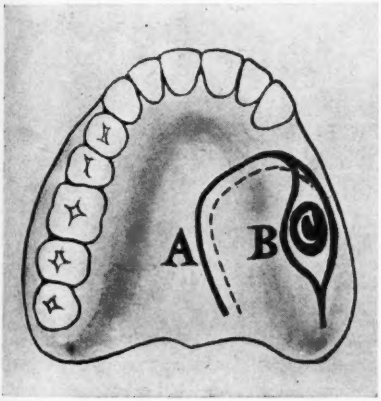


Fig. 12.—Flap Closure 3: *C*, opening into antrum; *B*, the retracted tissue.

This intra-oral radical antrum operation as described with slight modifications to suit the individual case will control the greater number of antrum infections of mouth origin and will leave all tissues in a more normal condition than will radical operations through the nose, which leave an enlarged permanent opening and may give after-trouble, from reinfection, or may interfere with the function of breathing. However, radical operations through the nose may be indicated in certain stubborn cases that are slow to be controlled by any method.

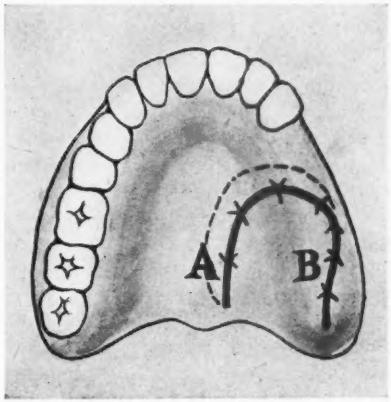


Fig. 13.—Flap Closure 3: After operation.

The cases that are the most difficult to control are those in which it is necessary, through degeneration, to eliminate all or most all of the mucosa, the ostium fails to function, and there is a direct connection with another infected sinus.

Results of antrum operations, like those of many other body operations, are not always sure. When the antrum is once infected, it is weakened and becomes subject to reinfection more readily through life, so the oral surgeon should proceed cautiously, with assurance of good results.

THE SIGNIFICANCE TO DENTISTS OF PHYSICO-CHEMICAL CHANGES INCIDENTAL TO AMALGAMATION AND THE HARDENING OF DENTAL AMALGAMS

By WILLIAM E. HARPER, D.D.S., Chicago, Illinois

(Read before the Indiana State Dental Society, Indianapolis, Indiana, May 19-22, 1924)

SHRINKAGE and expansion in fillings made with high grade dental alloys cannot be avoided by the use of alloys with a balanced formula. Dangerous movement may be avoided by the use of a correct amalgam technic only. The dependable alloys at present on the market have a formula within the following range: 66 to 69 per cent of silver, 23 to 27 per cent of tin, 3 to 5 per cent of copper, and 1 to 2 per cent of zinc. Such alloys may be considered high grade when properly fused, cut sufficiently fine and fully tempered.

Alloys containing less than 66 per cent of silver or more than 27 per cent of tin will generally be found deficient in some essential particular.

Tin in excess of this amount seems to interfere seriously with the development of complete amalgamation of the silver contained; retards the setting beyond operative needs, and makes an amalgam mass from which it is practically impossible to remove the excess mercury and unnecessary tin, both of which are decidedly harmful if allowed to remain in the finished filling. The less tin and excess mercury the finished filling contains, the stronger and more stable the filling will be.

The investigations of Petrenko, McBain, Joyner and Knight indicate that a well annealed dental alloy consists of crystals of Ag_3Sn embedded in an exceedingly fine granular eutectic mixture of Ag_3Sn and Sn. These same investigators concluded that the process of amalgamation consists of a chemical reaction of the mercury with the compound Ag_3Sn to form the compound Ag_3Hg_4 and free tin according to the following equation: $Ag_3Sn + 4Hg = Ag_3Hg_4 + Sn$.

If more mercury is used than is sufficient to combine with all the silver present, the excess produces a solid solution of mercury in tin, and possibly a tin mercury solution.

If the equation presented is correct, the tin in a dental alloy seems to serve a temporary or transient purpose only; after which, it would seem that its complete elimination is desirable. This I believe, is true, in the light of results obtained in the employment of amalgam by the use of a procedure that has for its main purpose the most complete removal of the soft tin and excess mercury from the finished filling. With such a technic, the strongest nonleaking amalgam filling can be made permanently devoid of movement sufficient to disturb adaptation when once attained.

Tin in a dental alloy serves three purposes: 1. It facilitates the initial amalgamation. 2. It lubricates the mix. 3. It retards the setting to provide sufficient time to permit insertion of the filling while properly plastic.

After these purposes have been served, the more completely we are able to remove the tin and excess mercury, the stronger and more stable the filling will be.

It has been demonstrated that whenever solidification of a substance is accompanied by solution, chemical reaction and crystallization, especially if complicated by long-continued diffusion, we have alternation of contraction and expansion. Arthur W. Gray, director of physical research, Caulk's Dental Research Institute, has shown conclusively that dental amalgams undergo these changes in the mixing, and during and after the process of hardening. He has described the movements that occur in the complete manipulative and hardening process of amalgam as: 1. Rapid contraction to a minimum. 2. Somewhat slow expansion to a maximum. 3. Considerably slower contraction to a second minimum. 4. Much slower expansion to a second maximum.

The first movement, contraction, occurs during the mixing (representing the stage of solution, and chemical reaction). The second movement, expansion, appears when crystallization predominates over solution and chemical reaction. The third movement, contraction, develops after the filling is completed, and is evidence of further solution and chemical reaction by the gradual diffusion of excess mercury to combine with remaining undissolved silver. The fourth change, slow expansion, is due to crystallization following secondary solution and chemical reaction occurring by diffusion.

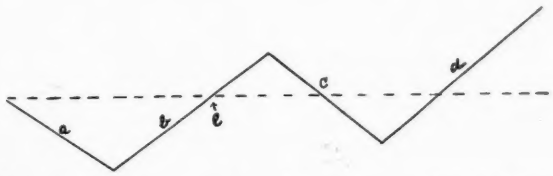


Fig. 1.—Curve of alternate contraction and expansion resulting from faulty technic.

The inconsistency of results attained in the use of representative balanced alloys by skilled operators in all of the test work done before our dental societies should be sufficient to indicate to us that the use of balanced alloys does not guarantee strong, nonleaking amalgam fillings.

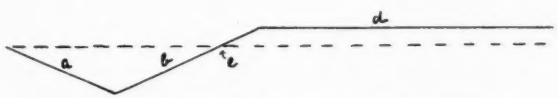


Fig. 2.—Curve developed when correct technic is employed.

What we do need is a high-grade alloy and a correct technic in the employment of amalgam, such as will assure (1) thorough amalgamation; (2) a lubricated plasticity that will remain free from crepitation during the packing into angles and against cavity walls,

and (3) thorough, forceful and orderly tight packing.

Fillings made with high-grade dental alloys may be caused to shrink or expand at the will of the operator, when all of the possibilities of variation in the procedure employing amalgam are known.

Figure 1 shows the curve of alternate contraction and expansion occurring in the employment of amalgam as a result of the use of a faulty technic. The letter *e* indicates in the diagram the point of completion of the filling.

Mixing develops solution and chemical reaction, during which we have rapid contraction, indicated by the line *a*. Packing causes the amalgam to set or harden (crystallization), during which we have rapid expansion, shown by the line *b*.

By diffusion, we have secondary solution, chemical reaction and slow contraction, indicated by the line *c*, followed by hardening (crystallization) during which we have slow expansion as shown by the line *d*.

In the employment of amalgam, the use of a correct technic practically eliminates diffusion. As a consequence, we have no secondary solution and chemical reaction, and crystallization to cause contraction and expansion as may be indicated by the straight line *d*, following the completion of the filling (Fig. 2).

Thorough mixing causes most of the contraction of solution and chemical

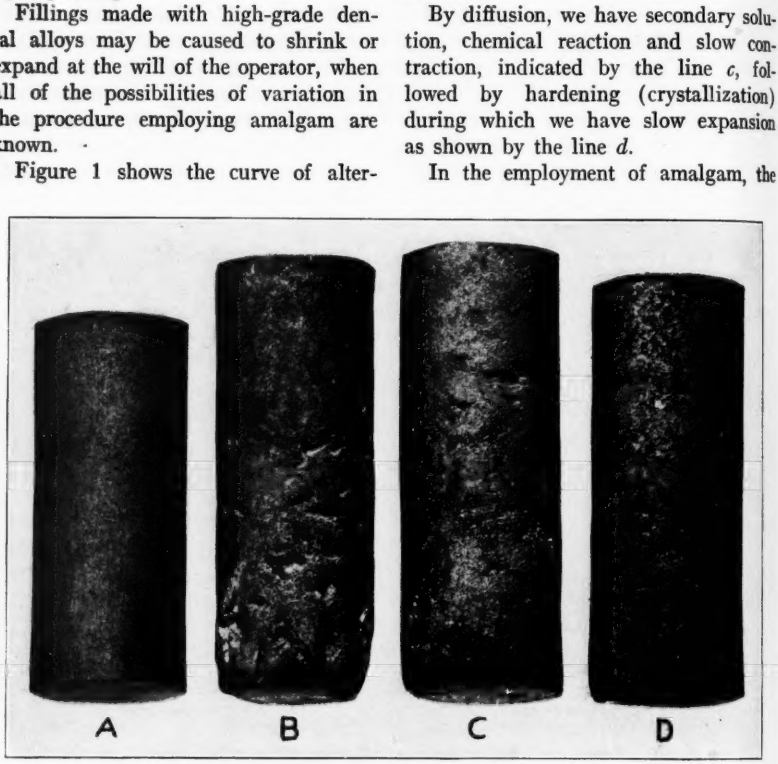


Fig. 3.—Test fillings made by Gray, employing the following proportions: *A*, alloy 5, mercury 8 (mixed two and one-half minutes); *B*, alloy 5, mercury 8 (mixed eight minutes); *C*, alloy 5, mercury 8 (mixed one-half minute); *D*, equal parts of alloy and mercury (mixed two and one-half minutes).

reaction to occur in the mortar. Thorough, orderly and tight packing will cause most of the expansion of crystallization to occur before the filling is completed. With these operative details properly applied, we have practically no diffusion to disturb adaptation.

To repeat: The use of an excess of mercury and mixing to practical completion in the mortar (from two to three minutes) develops a smooth well lubricated plastic mass, and by retaining the excess mercury in the mass up to the moment of insertion, the maximum

A workable plasticity, and a plasticity rendering the amalgam sufficiently smooth and well lubricated to move on itself without drag or creak or crack are separate and distinct conditions.

A workable plasticity, sufficient to permit the operator to build the filling to form, is generally attained with a half to one minute mix. Such a mass, however, will not make a nonleaking filling except occasionally in small and shallow cavities.

A mass sufficiently smooth and well

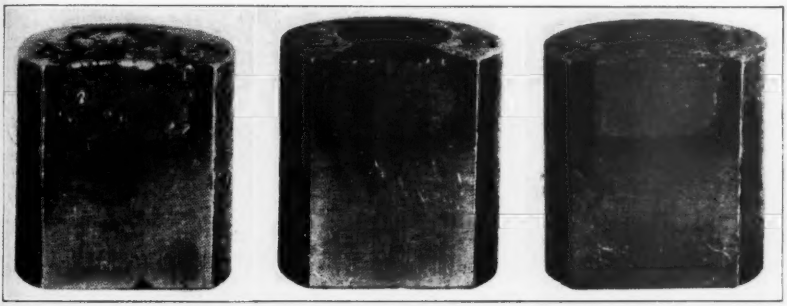


Fig. 4.—A few samples of test fillings made for the author. All show the result of an improper degree of plasticity.

adaptability to cavity walls is retained and may be secured by thorough, forceful and orderly packing. Such a procedure will eliminate secondary solution, chemical reaction and crystallization to such extent as to make harmless dimensional changes that may take place in the finished filling.

The value of proper plasticity is the most important lesson we have to learn and may be considered the key to perfect adaptation; and the operative details next in importance are those necessary to the most complete elimination of excess mercury.

Dental alloys must be cut sufficiently fine to amalgamate thoroughly within a period of from two to three minutes' mixing.

lubricated to move on itself, without drag or creak or crack, requires rapid rubbing in a mortar for two to three minutes (one-half to one minute in an electric mixer) to insure perfect mixing, plasticity and complete amalgamation.

In the use of high-grade, quick setting alloys, these differences in plasticity must be recognized and provided for to attain reasonably uniform results in adaptation of amalgam to cavity walls.

The effect on plasticity and adaptation of the use of insufficient mercury, or insufficient or excessive mixing time, is the same as may be observed by a study of Figure 3 presented by Arthur W. Gray.

A shows a perfect filling, the result of the use of correct proportions and

mixing time, illustrating the need and guide to proper plasticity.

B, C, and *D* show defects caused by lack of plasticity, which may be caused by the use of insufficient mercury, undermixing or overmixing; or may result from the removal of the excess mercury during the mixing or before insertion into the cavity.

During the past ten years, I have sought by lecture and public demonstration to impress on the profession the need for the use of an excess of mercury in making the mix; and the necessity of a two to three minute mix; also, the necessity of retaining an excess of mercury within the mass up to the moment of packing against cavity walls, all of which are necessary to perfection in adaptation and to the stability of the filling.

The diagrams and illustrations visualize the consequences of our neglect of important operative details and corroborate the deplorable faults in adaptation that I have observed in the test fillings made for me by representative amalgam operators in all sections of the United States, photographs of which I have presented in THE JOURNAL from time to time, and a few examples of which I present in Figure 4.

A CASE OF FRACTURE OF THE MAXILLAE AND MANDIBLE

By RALPH C. COOLEY, D.D.S., Houston, Texas

THE case herewith presented was reported to the staff meeting of the Jefferson Davis Hospital.

Report of Case

History.—The patient, a student flyer in the Texas National Guard, suffered fractures of the maxillae and mandible, February 23, 1924, as the result of an aeroplane accident. He was taken to the Baptist Hospital, Houston, Texas, and given emergency treatment, including suturing of soft tissues of the lip and chin. Roentgenograms of the jaws were taken, but no effort was made to reduce or immobilize the fragments other than by routine bandaging.

Examination—I was called to the case, two days later. The patient's face was swollen past recognition; the eyes were swollen closed, much injected, but otherwise apparently uninjured; the nasal bones and cartilage were intact. The upper right central and lateral incisors were missing. The left central and lateral incisors and process were fractured and pendulous, and were subsequently removed. The lower four incisors and the left lower cuspid were missing as was a considerable amount of the investing soft tissues and bone. There was a free flow of saliva and pus from the mouth, and blood stained mucus from the nose. The patient was still showing decided symptoms of concussion.

New roentgenograms of the head and jaws were taken. From these and a digital examination, a transverse fracture of the maxillae, complete and bilateral, was found, on a line just under the nose and slightly above the normal root-ends. Complicating this was a fracture down through the median line of the palate, and a complete severance of the soft tissues, complicated by a puncture wound about three-eighths inch in diameter midway of the hard palate. These fractures left the two remaining lateral halves of the jaw with teeth in place pendulous to the extent that they could be moved in any direction, and their proper position was impossible of determination because of the loss of teeth in the anterior region, and of all other landmarks.

The right condyloid process of the mandible was fractured well down at the neck, and there was a compound, comminuted fracture through the anterior portion of the mandible in the region of the left lower cuspid. There was decided displacement of all these fragments, together with a complete cut through chin and lip, presenting a gaping wound, much torn and lacerated, swollen and infected.

Operation—The next morning, the palatine tissues were closed with sutures; a 14 gage silver arch bar approximated to buccal surfaces of the maxillary fragments was wired to them by small interdental wires and the fragments were crushed up into place. The lower left portion of the mandible was then brought up so that the respective teeth were in occlusion, upper and lower, and ligated to the upper arch bar by interdental wires. The lower right side was then reduced and fixed in like manner, and the head and jaws were firmly bandaged. The patient was under the anesthetic two hours and fifteen minutes.

Comment.—My reasons for wiring in this case, as outlined above, were several-fold. In the first place, an interdental splint was in no way indicated; (1) because of the condition of the fragments, the fact that there was a palatine cleft, together with the great laceration of the chin and lip, mentioned above; the practical impossibility of getting proper impressions of the fragments, coupled with the very serious condition of the patient, necessitating the immediate immobilization of the parts and obviating the possibility of again giving him an anesthetic for the purpose of inserting such a splint; and

(2) because of the loss of structure and normal anatomic relations, together with a great amount of swelling which would have made the whole procedure, alinement, replacement of fragments, fixation and expression, a matter of merest guesswork and conjecture.

Course and Treatment—Postoperative nausea and the pulling of the genial muscles loosened the wires on the right side and the chin drifted downward and backward, carrying with it the upper fragment to which it was ligated. As all other fragments remained in good apposition, no effort was made, or could be made, to prevent this drifting until some of the swelling and infection subsided, and

A B

Fig. 1.—Appearance of patient: *A*, three years before accident; *B*, since restorations.

With the wiring, as outlined before and hereafter, it was possible for me to make the patient immediately comfortable, and to obtain a close approximation of normal anatomy in the reduction of the fractures and keep the parts clean and the fragments in status quo awaiting the reduction of the swelling and the healing of the lacerations and contusions of the soft tissues.

until such time as there might be a degree of knitting of some of the other fragments so that we could have at least one firm anchorage.

Frequent irrigations were made with from 25 to 50 per cent surgical solution of chlorinated soda, heated, which was left off occasionally and Dobell's solution substituted. The patient at no time had a temperature above 100 F. He was given such liquid nourishment as he could take.

March 15, all wires were removed, impres-

Fig. 2.—Specimen skull, with fractures outlined; anterior open mouth position.

Fig. 3.—Specimen skull, with fractures outlined; anterior closed mouth position.

Fig. 4.—Specimen skull, with fractures outlined; right side.

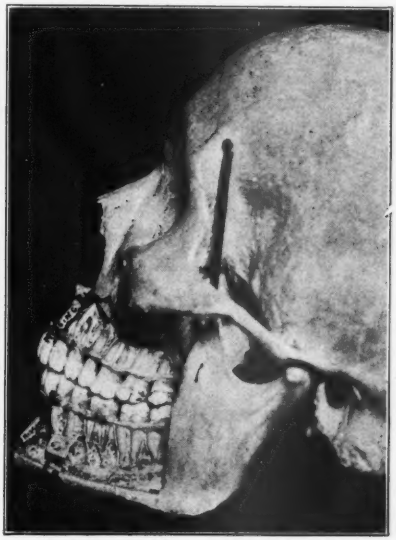


Fig. 5.—Specimen skull, with fractures outlined; left side.

sions made and models poured of the two lateral halves of the mandible. Infection was clearing up, and it was found that the left upper maxillary fracture had quite firmly knit, and the lower left mandible showed no tendency to drift from its proper relationship thereto.

Fig. 6.—Models of case; final splints, wires and jackscrews in position.

Bilateral splints were then cast and fixed to the teeth, an orthodontic jackscrew was fitted with one end adjusted into one-half of the splint, and the other end into the other half. The left mandibular fragment was then refixed to the maxilla in its proper position with interdental wires, as before, and the jackscrew tightened up. At this time, the patient had no chin, and there was a distinct overlapping of these anterior fragments. Day by day, this jackscrew was tightened until it was seen that this anterior fracture could be reduced, which was done by intermaxillary leverage, thrusting the chin fragments forward into place. Fixation was secured by intermaxillary wiring and the retention of tension on the jackscrew. This was accomplished March 29. Roentgenograms were then taken, and were retaken May 8, when all splints were removed; the patient was dismissed for the time being, and returned to his home, April 1.

Later Operative Procedures.—June 20, he returned for further observation. The gums and other soft tissues of the mouth had taken on a very healthy aspect; the remaining teeth had become entirely solid in their investing tissues, and the pulps were vital. However, the tissues of the lip and chin were bound down and drawn in by a broad band of scar tissue, mesially to the left lower first bicuspid. The following day, the patient was prepared, and a plastic operation was performed the scar tissue and the adhesions being dissected away and normal gum tissue and mucous membrane drawn into their place.

July 15, the patient again returned, and another plastic procedure was accomplished on the upper anterior ridge, the tissues being smoothed and prepared for the insertion and reception of reconstructive dental appliances, probably some form of fixed bridgework.

Presented herewith are models of the jaws at completion, showing apposition, position of fragments and occlusion, final splints, wires and jackscrews in position; a specimen skull with the fractures outlined upon it; and the photographs of the patient before the accident and after restorations.

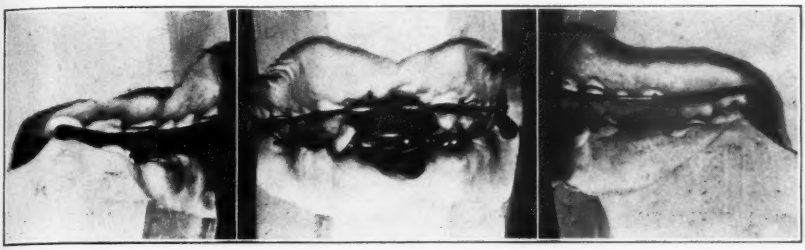


Fig. 7.—Models of case; final splints, wires and jackscrews in position.

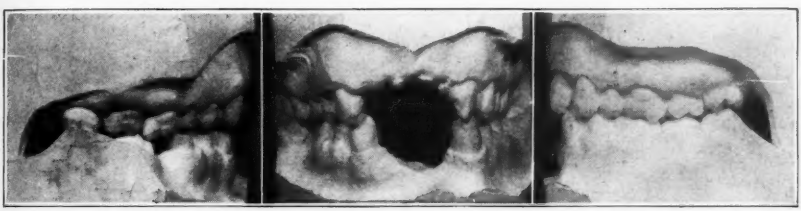


Fig. 8.—Models of case: final splints, wires and jackscrews removed; fractures knitted, teeth in occlusion.

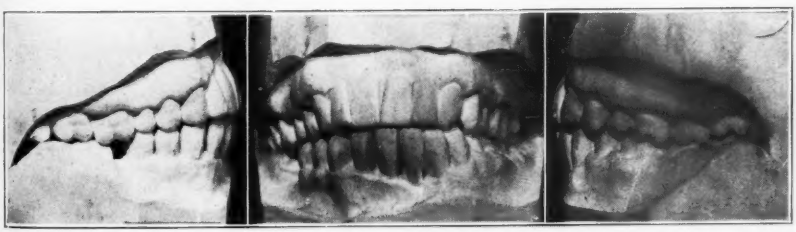


Fig. 9.—Models of case at completion; bridgework and restorations in place.

THE POSSIBILITIES OF PROFESSIONAL SERVICE THROUGH COOPERATION BETWEEN THE DENTIST AND HIS ASSISTANT

By C. N. JOHNSON, M.A., LL.D., L.D.S., D.D.S., M.D.S., F.A.C.D.,
Chicago, Illinois

(Read before the Tri-City Study Club, Davenport, Iowa, September 27, 1924)

IN the increasing complexities of our modern civilization, one of the things that have come into our lives as an important factor in efficient service is what we are pleased to call "teamwork." Life is no longer an individual matter, and the performance of many of our industrial, commercial, and technical processes demands a grouping of our physical and mental resources in order to obtain the best results. The days of the village shoemaker, as such, are numbered, much as we may lament that pathetic fact. Thanks to an economical strain that still persists in some of us, the cobbler—the repairer of shoes—is still with us; but the picture of the man who patiently fashions a shoe to order from the raw materials, sitting aproned at his leather-covered bench, is receding into the haze of the dim and distant past.

Though this may be deplored as a matter of poetic tradition, it is only in keeping with the inevitable evolution of our modern life, and no man or group of men may ever hope to stem the tide. And it is not only in industry and commerce that individualism is passing away; the urge of cooperation is permeating the professions, and the surgeon or dentist who today attempts to perform his operations without the services of a trained nurse or assistant is doing so at a distinct disadvantage.

The thing for all of us to consider primarily in our professional relationships is the most efficient service to the people, and this can be performed only with the aid of a dexterous and well-trained assistant. There are many of the technical processes connected with dental practice that are so entirely routine in their nature that they can be mastered by an assistant who will apply herself assiduously to the task. And in particular there are many of the amenities connected with the conduct of a professional practice that only a tactful and diplomatic woman can ever hope to dispense. Woman has come into our lives as an integral part of our professional existence. She has not only come in and sat down beside us in many of our activities, but she has actually pushed us off the seat entirely in certain others. By this it is not meant that she has become obtrusively in the way in any particular. She has never come without invitation on our part, and never in the slightest degree has she usurped a prerogative that did not logically belong to her. She has simply been helpful in the truest sense, and we are indebted to her more deeply than we shall ever be able to repay.

Taking the title of this paper as our text, it may be advantageous to point out some of the ways in which cooperation between the practitioner and the assist-

ant may result in more efficient service to the patient. The factor of greatest moment in every well-regulated dental office is the saving of the dentist's time. Time is his capital, and everything that saves time is an asset. All unnecessary waste of time is a handicap to the dentist's efficiency, and a direct drain on his producing power.

The function of the trained assistant is to save the dentist's time by supplementing his efforts at every hand. She should study his methods of operating and know intuitively just what instruments and accessories he will need for a given operation as soon as the patient takes the chair, and all of these should be placed ready at his hand so that he may proceed with his operation immediately and not waste his time in selecting his instruments; or worse yet, in searching for instruments that have been placed in the wrong drawer after being cleaned and sterilized from the previous operation. It is always extremely disconcerting to a methodical operator to have his attention needlessly diverted from the work in hand in order to make a search for a misplaced appliance. It is not only the loss of his time, but, of far greater import, it is the interference with that orderly, consecutive and rythmic performance of his work which means so much for the efficiency and ease with which each operation may be carried on. To have every operation proceed in a smooth and systematic manner from beginning to end is to contribute largely not only to the daily practical output, but particularly to the avoidance of that nervous tension which, among all the various factors of fatigue, levies the greatest toll on the dentist's energy and endurance. Harmony of technical procedure is one of the chief agencies by which the daily routine of the office work may be conducted to the best advantage, and with the minimum of nervous and physical strain; and no other single agent can contribute so largely to this result as an observant, alert and well-schooled assistant.

Then there is another consideration that is by no means negligible, and that is the effect produced on the patient. When precision and order prevail in all our operative procedures, and when words are not wasted in constant instruction to the assistant, the patient is at once impressed with the general efficiency of the office, and is not so prone to think lightly of the dentist's time. In an office where promptness and dispatch are plainly evident, the patient grows to respect the value of time and is not so likely to form the habit of coming late to an appointment or of breaking an appointment without due notice. Patients are largely what we make them, and a good assistant can do much in the way of impressing patients that the office is run as nearly as possible on schedule.

I have spoken about the amenities in an office, and of the assistant's ability to take advantage of this agency for the promotion of harmony in the atmosphere of the place. In the exigencies of a busy practice, it is inevitable that difficult situations will occasionally develop. Emergencies frequently arise to interfere with the routine of things; for instance, a patient suffering pain comes to the office without an appointment. It should be one of the tenets of the office creed that pain always gives a case the right of way, and no matter at what inconvenience to the operator or to other patients, pain should be relieved as promptly as possible. In the attempt to do this, it sometimes happens that patients with appointments are compelled to wait a few minutes beyond their allotted time. This is always trying to both patient and operator, but it should not be left for the latter to explain this and smooth the situation over. It is here that the expert assistant may lubricate the office machinery and pour the oil of tactful explanation on the troubled waters. In doing this most effec-

tively, she must never try to minimize the extent of the inconvenience to the waiting patient. To belittle this is to be unjust and to raise resentment. She must freely acknowledge the hardship of waiting, and enter sympathetically into the patient's point of view, at the same time tactfully pointing out the bounden duty of every dentist to relieve pain at no matter what sacrifice to others. Most patients are amenable to reason when appealed to in this way, and meanwhile the dentist should do his part by making every move count and detaining the waiting patient as short a time as possible. In an office where it is constantly made plainly evident that due consideration is displayed for every patient who comes in, there will be a minimum of inharmony, no matter how busy the office may be.

The whole theory of conducting an office efficiently and harmoniously is summed up in the policy of always having a due regard for the point of view of others. To be able constantly to look beyond our own interests and to visualize with magnanimous unselfishness the interests and attitude of those with whom we come in contact is to go a long way toward solving the problem of harmoniously conducting a professional practice, and accomplishing the greatest measure of good. Every dental assistant should have it instilled into her consciousness that one of the chief articles of our professional faith is founded upon the principle of due consideration for others, and that selfishness is the besetting sin of humanity today. Magnanimity and great heartedness will conquer the world more surely than will the sword, and until civilized man learns this fundamental lesson we shall not get very far toward regenerating the peoples of the earth.

After all, the policy pursued by the dental assistant is usually primarily the policy of the practitioner with whom she is associated. Her acts and thoughts are largely colored and formed by the example she has before her each day, and thus the practitioner who expects to get the best results from his assistant must first school himself in that kind of mental discipline which makes for charity and broadmindedness. Patients should be able, after one or two visits to an office, to tell very accurately just what the atmosphere of that particular office is, and usually they will conform to the usages and policy of the office after becoming familiar with them. Thus, the dentist and his assistant may be the means of exerting a salutary influence on the immediate circle with whom they come in contact; and while it is probable that very few dentists ever consider this phase of their relationship to the public, it may really be made a very important and praiseworthy part of their professional service.

While, of course, the policies of every office must of necessity be instituted by the dentist himself, the interpretation of those policies to the patrons must be left largely in the hands of the assistant. The more the dentist's contact with his patients is confined to the strictly professional and technical, and the less he has to do with the social and business side of his office, the better it will be for him, and the more effectively will his services be performed. It is the function of the assistant to prevent as much as possible the discussion of business matters between the patient and the dentist. There is nothing more distracting or more subversive of good service than for the professional man to be obliged continually to argue over fees, and, above all, there is nothing more demoralizing than for the dentist to make it a practice to indulge in the so-called "service-selling" talks so frequently advocated. With people whose patronage is worth having, there is something very objectionable in the constant reference to financial matters on the part of the operator, and there is really very little necessity for it if the conduct of the office is based on the

right policy. As soon as an office has acquired a reputation for equity and justice, there will be little need for discussing fees, and any necessary explanations that may be called for are readily made by the assistant provided she has familiarized herself with the office routine. The pernicious practice of continually harping on fees that is indulged in by some dentists will surely bring the profession into disrepute if it is not checked, as will also some of the ideas advocated by men who are trying to teach to dentists business methods wherein the only point of view considered is that of the dentist, and the welfare of the patient is never referred to. It may as well be recognized at once that no system of business management will ever succeed permanently which ignores the rights of the patient, and no man can ever get satisfaction or happiness out of his profession who practices it solely with his eye on the "almighty dollar."

Every assistant should be schooled by her employer to have a just regard for the point of view of the patient, and, with this conviction as her sheet anchor, she will be adequately armed to meet any emergency and to make any argument necessary to adjust whatever differences may arise. The great value of this kind of service on the part of an assistant cannot be estimated. It leaves the operator free to devote all his energies to the technical and scientific phases of his profession, and results in the best possible service to his patients. To practice dentistry day after day is exacting enough without the numerous petty annoyances that are likely to arise unless there is someone besides the operator to smooth the way, and act as a buffer between him and the unnecessary exactions of the public.

Fortunately for our profession, the dental assistant is becoming more and more efficient. Her sphere is widening and her usefulness is extending, and the prediction is hereby made that in the next few years we shall witness a wonderful development on her part. This will come in two ways: through a higher appreciation of her worth on the part of the profession, but chiefly through the medium of the organizations which she is forming in different sections of the country. Dental assistants' associations are increasing in numbers everywhere, and the greatest good is to result from them, provided they are conducted along broad and ethical lines. Up to this time, they have demonstrated a most praiseworthy attitude in their association work, and nothing but good can come from such efforts. Those with which I am familiar have adopted for their code of ethics that of the American Dental Association, and if they follow along the lines already laid down, there can be no question as to their ultimate success. They are already adding immeasurably to the spirit and efficiency of their members, and they should receive the hearty support and encouragement of the dental profession. Some of them are struggling through the same handicaps and discouragements that confronted the early dental societies, and we as dentists must do all in our power to help them over the hard places and plant them firmly on a substantial basis. Our support and encouragement will mean much to them at this time, and all we do for them today will come back to us a thousandfold tomorrow in a better service and a broader vision. It can result in nothing but good to have our assistants gain a larger conception of their possibilities for service, and a better and truer perspective of the essentials for a useful and happy professional life. Personally, I am very enthusiastic over these organizations, and I have deemed it one of the greatest privileges and honors of my life to have been chosen by one of them as their counsellor and friend. It has been my good fortune to be permitted to work with these girls in their association for more than a year, and I can give testi-

mony to their earnestness, faithfulness and devotion to what they believe to be for the best interests not only of their employers but also of the people they conjointly serve. I look with the utmost hopefulness to the future of these organizations and I bespeak for them the hearty support and the cordial cooperation of the dental profession in every community where they are organized.

To sum up, I believe that the most effective dental service to the people is to come from a clearer conception of the possibilities of the assistant, and from her elevation in status to a plane where she will be looked on not as a mere "office girl," but as an integral and important factor in the administration of a professional practice. If we accord her this status, I predict that she will develop in ways that today we cannot conceive, and that the net result will be a more enlightened aid to the dentist and a more intelligent service to humanity.

On her part, if I may be permitted the privilege of a suggestion, I would intimate that if she is to come fully into the fruition of her destined heritage, she must attain it solely through the medium of unselfish service. It is by this means that the greatest achievements of life are won, and by this means only. He who keeps his eye forever on the main chance, who thinks only of the material rewards that are to come from his efforts, who seeks constantly to gain advantage for himself, never rises very high in the world's esteem, and never achieves anything really worthy of note. The professions have been built up through self-sacrifice on the part of their members. They are respected today because of their altruistic tendencies, and not because of their financial prestige or their material grandeur.

Whenever their members have fallen in public esteem, it has been mainly due to the worship of the god of Mammon. Let the assistant keep her eye on the higher things of life; let her give freely and cheerfully of the best there is in her to the service of humanity; let her even at times go out of her way to do good and be kind, and I promise her, from the fullness of a somewhat extended experience, that she will not only secure to herself the rich reward of happiness, but that in the end she will achieve the highest material recompense. To this fortunate consummation, I confidently commend every young woman assistant in the land.

HISTOPATHOLOGY OF THE PERIAPICAL REGION

By EDWARD H. HATTON, B.L., M.D., Chicago, Illinois

(Read before the Illinois State Dental Society, Springfield, Illinois, May 13-15, 1924)

DISEASE changes in no other tissue of the body are so little understood as those in bone, possibly because in this country necropsies are so rarely extended to include the bones and joints. Because of this and as an introduction to this subject, it may not be out of place to make a few brief statements concerning the ways in which infected bone acts differently from soft tissues.

Bone, instead of being a highly fixed tissue, especially in early life, is constantly undergoing change. Both its external form and its internal structure are equally unfixed. There is no part of the bony skeleton that exhibits a more interesting arrangement of the cancellous bone than the head of the femur, where it can be shown that this is not a purposeless network surrounding marrow spaces but a definite, mathematically correct solution of a problem in construction, namely, the most efficient placing of bone spicules in the form of arches to carry the weight of the trunk and the stresses applied to this joint. Any alteration of the forces so applied, the result of accident or disease even in adult life, is associated with changes in the arrangement of this cancellous bone. No one, as yet, has so successfully analyzed the more complicated relation of force and form in the jaws, but some men, notably Noyes and MacMillan, have been impressed with the idea that the anatomy of the jaw bones must depend on this principle.

Certainly the bones of the jaws change more than any other bones in the body, and these changes are associated to a high degree with the development, eruption and exfoliation of the teeth, whether the latter be a natural process, as in the loss of most of the temporary teeth, or a result of disease, as is frequently the case in the loss of permanent teeth. In either circumstance the resulting form and structure of the jaw is produced by a process of functional adaptation to the most recent condition.

The changes in bone because of disease are also different from those found in soft tissues because of the comparatively large proportion of extracellular substance in bone and the broad spaces between the occasional living cells. Absorption or solution of large or small regions of diseased or dead bone proceeds very slowly, and these areas cannot be separated from the healthy bone with any great degree of rapidity or certainty. Dead bone remains as an irritating body for long periods of time, often more or less surrounded by a shell of new, dense bone tending to encapsulate the necrotic portion and wall it off from the surrounding living bone. Clinically such masses of dead bone are associated with sinuses discharging on mucous membrane or skin, and such sinuses persist until the fragments are completely absorbed, exfoliated through the sinus or removed surgically. The significance of this should not be lost sight of in that the presence of such a discharging sinus is an important sign frequently indicative of the presence of dead bone; on the other hand it is hard to conceive of the presence of dead or

necrotic bone without the presence of such a sinus.

Infections in bone produce in general

Fig. 1.—Section of an endentulous mandible. The ridge is formed entirely of thick cortical bone (*R*). The top of this ridge is a continuation of the buccal and lingual plates.

three types of change: (a) Very acute and high grade inflammations may and usually do cause death of considerable

Fig. 2.—Like Figure 1, a section of an endentulous mandible. The cortical bone at *R* is not so thick and so well developed. The arch therefore is not so nearly perfect.

masses of bone. The marrow spaces and haversian canals fill up with pus and this pus usually finds an outlet, first just beneath the periosteum and later along planes of cleavage in the soft tissues. (b) A lower grade type of inflammation usually causes absorption of considerable cavities in the bone accompanied by filling in of the space so made by soft granulation tissue with some tendency to liquefaction. (c) A mild form of infection in which a small, granulation containing cavity is surrounded by a zone of very dense sclerotic bone. Such sclerotic bone is often very irregular and if on or near a surface is in the shape of nodules or exostoses; the increase in bone density may extend for

Fig. 3.—Section through a tooth socket (*S*), in the lower jaw after recent exfoliation of the tooth. The bone regeneration is far from complete.

a considerable distance beyond the margin of the granulation containing cavity. In bacterial inflammations the cancellous bone is usually involved first and the dense, cortical bone resists invasion and tends to wall in infection without becoming involved except adjacent to the infected zone.

Periapical infections of teeth, so frequently called granulomas, pus sacs, blind abscesses and so forth, are essentially no different from bone infections elsewhere in the body and except for the acute form may be described and classified in the following manner: In general their structure may be likened to a soft,

hollow rubber ball somewhat collapsed by a cone shaped body corresponding to the tooth root, the hole in the ball opposite the apical foramen. The rubber hemispheres represent an inner and outer capsule of the infected region, the former hugging the root end and the latter (outer) resting snugly against the bone of the tooth socket. The space between the two hemispheres is filled by a spongy network of fibrous tissue, the meshes of which are occupied by islands of infiltrating cells, including various types of leukocytes. Noyes, as a result of his demonstration of the lymphatic drainage of the tooth pulp, has offered the only logical explanation for the development of this condition. Since infection advances in the perivascular lymph spaces, all infections primary in the pulp leave the pulp approximately through the center of the apical opening and proceed toward the depths of the alveolar process until anastamosing vessels are met about half way between the tooth apex and the bone of the tooth socket; then the process spreads out, fanlike, splitting the fibers of the periodontal membrane into two parts, an internal and external capsule, with an inverted Y-like attachment to the intact periodontal membrane. This is a most fortunate circumstance, for the apical cementum is spared for a considerable time from the destructive effects of the infection.

Variations of the type form here described produce the clinical pictures usually seen, namely:

1. A destructive form with solution of the contents of the space between the capsules, inadequate capsule formation and the discharge of the purulent fluid through a fairly large open pulp canal or through a sinus to some surface, that is, a chronic alveolar abscess with sinus formation.

2. A type in which absorption plays the major rôle, with the formation of comparatively large zones about the tooth apex due to destruction of the alveolar bone and even of parts of the tooth apex. The content of the space between the capsules is made up of a minimum amount of fibrous tissue network, and a maximum number of infiltrating cells; this material is pulpy, even edematous, but not fluid.

3. A form with thick fibrous capsules embedded in dense cortical bone, and a minimum amount of intercapsular infiltration largely adjacent to the tooth apex.

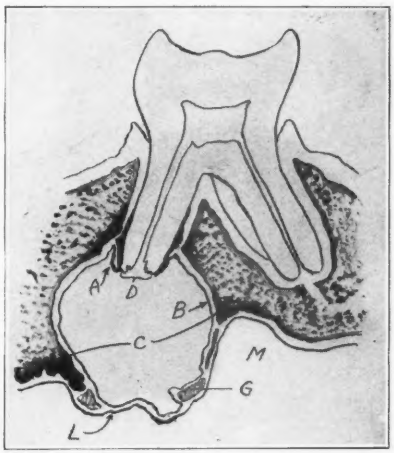


Fig. 4.—Periapical infection around an upper molar, illustrating the rather diffuse type, with absorption and denudation of the apical cementum. The extent of this denudation is most important, as any considerable denudation offers a bad prognosis if such a tooth is treated by filling the root canal in the usual way. *D*, extent of denudation of the apical cementum; *A*, inner capsule of the infection; *B*, outer capsule lying against the absorbed tooth socket; *C*, bone of the upper jaw; *G*, mass of granulation tissue; *L*, lining of the maxillary sinus.

4. One midway between the two previously described types, associated with clinical fluctuations, with regions of dense encapsulation and others associated with bone or tooth absorption and inadequate encapsulation.

It has already been hinted that one of the most important zones in these periapical infections is that at the apex, first because the extent of the destruction of the periodontal membrane and the extent of the thereby denuded cementum has an important bearing on the prognosis after treatment, and because in the islands of infiltrating cells adjacent to the apex are the colonies of bacteria more commonly located.

Fig. 5.—Section through an upper molar and the maxillary sinus with a curved root lying just beneath the floor of the sinus; both halves of this section as pictured. The thin shell of bone over this root has been trimmed away. The shape and location of the roots of the upper molars and bicuspids are dependent on their relationship to the floor of the maxillary sinus. The floor of the maxillary sinus, including the membrane lining it, forms a barrier not only to a developing root, but also to the progress of an infection.

Extension of the diseased process to remote parts of the body is apparently very rare in periapical infections associated with sinus formation. In the absorbing type, extension to adjacent structures is the rule, and in the encapsulated form embedded in an impervious bony socket, extension, if it occurs at all, can only take place by the blood stream or lymph channels to remote parts of the body. It is obvious that the roentgenogram is comparatively easily interpreted in all forms except in the limited form in which, because of the associated dense bone or because of its position about the apex, it may produce no record at all.

Bone repair may be studied in healing fractures as of ribs, in bone transplants into various parts of the same body or other bodies or in the closure of tooth sockets after the loss of teeth by extraction.

It is rather interesting that the usual belief of clinicians that a very necessary step in the repair of a tooth socket after extraction is the formation of a substantial, well organized blood clot in the socket is borne out by pathologic and histologic investigations. As organization of the clot proceeds from the walls of the socket its surface is rapidly covered with mucous membrane by extension from the wound margins. New vessels penetrate into the clot and the clotted blood is absorbed and replaced, first by loose connective tissue and then by spongy bone; however, directly beneath the mucous membrane there is formed a layer of dense cortical bone similar to that of the buccal and lingual plates, only thinner. The wound surface in uncomplicated cases is covered by epithelium in seven to fourteen days; the canalization of the clot, its conversion into fibrous tissue and bone is much slower, so that the complete obliteration of the landmarks of the tooth socket as shown in roentgenograms may require months or longer.

The eventual end result does not seem to depend so much on the type of operation employed as on the adaptation of the jaw form at this particular zone to its new function. In most cases it would seem that simple extraction is associ-

ated with the most rapid repair, probably because it is more likely to be followed by satisfactory blood clot formation. It seems to be much easier for the body to remove by absorption any excess of bone left by the extractor that it is to replace loss of bone chiseled away by him. Deformity, therefore, is much more likely to result from a too generous trimming of the alveolar process or bony plates than from too little.

Fig. 6.—Section through a molar tooth and the maxillary sinus. The bone between the apices of these root-ends and the sinus has been completely absorbed because of pyorrhea, but the sinus membrane is still intact and there is no gross evidence of sinus involvement. Any attempt to remove the granulation tissue around these root ends surgically must end disastrously. *BB,'* extent of maxillary bone. Only soft tissues lie between these points; *M,* maxillary sinus.

It is often asserted that sclerosed bone is diseased bone and should be removed at the time that the teeth are extracted. Whatever the significance of sclerosed bone may be, and something concerning this will be added, it extends beyond the periapical regions much farther than most operators realize and the attempt to remove all of it, quite consistently, must require excision of a very large proportion of the jaw in this region, far more than is safe to remove in any event, except in the presence of a malignant tumor. The formation of sclerosed bone and encapsulation is a healing process and part of the effort of the body to wall off the infection from adjacent structures. There seems to be no good reason, because of this, for destroying this protective layer.

At least the burden of proof as to the menace of sclerosed bone is very definitely an obligation of those who conceive it harmful since its complete removal is prone to produce deformities or to postpone healing or complete restoration. I am satisfied no such proof has so far been offered, and feel sure that it will not be demonstrated in the future.

You will probably agree with me in the statement that the persistence of organs, tissues or parts of the same in the living body, while not wholly so, are very highly dependent on their use to it. I hope you will not think immediately of appendixes, tonsils and toes which may seem to have outlived their usefulness. The grafting of bone or cartilage into the abdominal wall and into a bone defect such as an unhealed fracture undergoes entirely opposite changes. The former is absorbed and disappears and the latter is reconstructed into bone in such a fashion as to replace the defect. These facts are usually assembled under the name of the "Law of Functional Adaptation of Roux." It is some such a rule that determines what occurs to the jaw bone after the extraction or exfoliation of teeth.

I realize that all of us either are, or should be, alarmed by the menace of bone infection and the effects that this may have on the progress of bone healing after the extraction of teeth complicated either by periapical infection or by pyorrhea, both of which involve the bone of the alveolar process and the jaws. The conditions found in periapical infections of the encapsulated or partially encapsulated types are so favorable to

healing as to merit but little discussion. The infected zone is so thoroughly walled off from the cancellous bone by a protective layer of dense cortical bone as to defeat dissemination except into the V-shaped wound, which affords ideal surgical drainage and lends itself to a rapid restoration. This healing proceeds almost as rapidly as in an undiseased socket, provided access to the spongy bone spaces is not made possible by meddlesome surgery. This occurs quite independently of the meticulous removal of every bit of granulation tissue from such a cavity, most of which is so firmly attached to the extracted tooth as to come away with it.

In the absorbing, diffuse types with or without sinus formation there may be some room for argument as to what procedure shall be used, but in a few instances I wish to show, meddlesome surgery would have produced such disastrous results that the indications for surgical interference beyond the border of the infected zone must be very compelling. The soft tissues form barriers to the progress of infection that are surprisingly impenetrable, this being particularly true of the lining of the maxillary sinus, in which respect one of these illustrations is very instructive.

There are examples of diffuse bony involvement with the formation of nodular aggregations of honeycomb-like bone that present problems which seem almost impossible of satisfactory surgical solution as they are studied in pathologic specimens. Even here it would seem that conservative methods offer the greatest proportion of successful end-results, for with the removal of the active cause and the establishment of surgical drainage, walling off of the infected zone is more likely to occur. Sequestra of dead bone then may be removed more successfully after such encapsulation without unduly furthering the spread of the infection.

Bone infection in the mouth as elsewhere in the body is fundamentally a chronic condition which presents difficult therapeutic problems. Such problems can only be solved on the basis of ample clinical experience and a detailed knowledge of both the normal and the pathologic anatomy of the parts infected.

Discussion

Herbert A. Potts (Chicago): The paper with its illustrations which we have just had, has occupied forty-five minutes of our time; the sum total of knowledge presented has required years of painstaking study by the pathologist, histologist, bacteriologist and dentist-surgeons, who have in a painstaking way spent years of effort and who have sought for the truths rather than study to prove some preconceived idea which many times is false. Consequently it is beyond the grasp of any one who is not familiar with the fundamental knowledge of these studies, to realize the importance of this paper.

There is no royal road to learning, consequently we must get the fundamentals which underlie all of these studies, in order to apply them to the clinic case in hand. It is because of the lack of this fundamental knowledge that we fly off at a tangent and pursue a course of treatment or fad only to give it up after a time as being wrong, but how readily do we take up some other fad, and follow that in the same manner.

We are all too prone to try some method which is intended to improve upon natural physiologic processes, and many times by only a simple drainage of infection the physiologic processes would take care of the condition much more readily and in a much better manner than if we exposed by the knife, the curet or forceps, a much wider area. We should all ask ourselves before operating: what damage can I do in attempting to improve these conditions? To illustrate: a man suffered a fracture of the neck of the mandible. The two attending men decided that these fragments should be wired, an absolutely unnecessary procedure. They cut down upon these fragments and wire them, but at the same time cut through all the branches of the facial nerve immediately in front of the parotid gland, and the man will suffer from a facial paralysis the rest of his life.

The simple extraction of a tooth may lead to very severe consequences, and I think we should instruct all of such patients that if there is pain on the second or third day, they should return for treatment and observation, which as you all know is out of the usual practice. The tooth is extracted and the patient is dismissed, which is a wrong procedure. The majority of such cases will come out all right, but we want more than just that. In medicine the majority of patients will get well in

spite of the doctor, but it is the prevention and the avoidance of these complications which are not the rule but the exception that we wish to accomplish.

These illustrations point to the study of the individual case in hand, and as each case presents, these things should all flash through our minds—is it possible that such a condition is there, unrevealed by the roentgen ray, notwithstanding what our habit has been in removing these masses of granulation tissue which are merely the process of healing. If the cause is removed and drainage established, and that frequently means keeping the gum apart, allowing the natural drainage, having removed the original cause, the healing process which has already started will immediately begin to overwhelm the remaining bacteria, and the formation of a blood clot is the first method or is the first aid, and as has been mentioned, the ideal healing takes place after the simple extraction; and we all know that the socket is filled with blood which coagulates and so far as the pain and discomfort is concerned the patient is well the next day and the organization of that blood clot takes place.

Now, what happens when that socket is packed so tight that the patient calls up in the middle of the night and asks you if he cannot remove that packing? We have lost in that case two-thirds of the healing process because that gauze must come out and it will not again fill up with the blood clot, and it must be kept packed until by sheer overcoming that packing, in the course of days and weeks the thing finally heals in by granulation tissue.

This paper and slides should form a guide for our serious consideration for a whole year or longer.

P. G. Puterbaugh (Chicago): I have been particularly interested in the presentation here today because it presents to us most clearly the changes which take place in bone incident to the healing process. We were all familiar with the healing of wounds in soft tissue, and when soft tissue is wounded and the edges coapted, within a week we have a good union. If you reflect a moment you know if bone is injured, as in a fracture, and the parts coapted, it will not heal in one week, but it will be nearer six weeks before you get a union. Therefore, be cautious in your production of wounds and injuries to bone.

Another thing that was presented in this paper is that abscesses in the periapical region are slow to heal, but healing is retarded in many instances by the apices of roots that are soaked with infection and prevent healing from taking place. It is also evident that bone, which is composed principally of intercellular substance, reacts slowly in its healing process, so beware about injury exposing bone to infection.

The reason a socket heals quickly and readily after the extraction of a tooth is because there is a remnant of the periodontal membrane left in that socket from which capillary loops are thrown out within twenty-four hours. If that is destroyed, as is pointed out by Dr. Potts, you then have an entirely different condition. Just remember that these so-called encapsulated areas at the apices of roots show Nature's effort to build and remember never to tear down. If you remove your irritant and give it a chance Nature has already laid down its foundation for healing, and so be cautious about too much mechanical injury about the apices of roots.

I am pleased to know that opinion is coming back to a more nearly normal and rational basis. This paper points out to us another thing and that is that we should reflect upon the illustrations given us today in our interpretation of radiograms. Do not expect any therapeutic agent to have intelligence or force enough to disinfect a root that is denuded, and held in that tissue as a constant irritant. Better remove the irritant and give Nature a chance to fill in as it would do.

I would emphasize a point also in Dr. Hatton's paper in which he said that all of these wounds will heal if proper drainage is established. If you could do nothing more than leave a wide open entrance to these infected areas they will heal very quickly, and so drainage may be essential in the larger cavities.

So then, when we sum it up, what pulpless teeth are we to treat? We are to treat and attempt to fill teeth in which the pathologic condition about the apex of the tooth has not progressed to the point that it has denuded the cementum of the periodontal attachment.

Oftentimes the roentgenograms we receive today are not clear enough to give us a proper basis, but if the history of a case implies that the pulp has lost its vitality only a short time and the radiographic evidence does not disclose a large area of bone destruction, we should take the chance, other things being equal, to give Nature an opportunity to fill in and to take care of the infection in the periapical region and should attempt to save such a tooth; but in the old chronic cases where we have that denuded root end, let us do a little more extraction than some of us have done in the past, not necessarily the radical method of extraction, but to supply drainage where necessary and give Nature a chance to go ahead and build in the area, a thing which she is making an effort to do all the time, bearing in mind that this so-called capsule or granuloma is always a healing process, waiting for you to remove the irritation, waiting to clear up the whole condition.

F. B. Noyes (Chicago): It was brought to my mind as Dr. Skillen was presenting the pictures, that we have all been inclined to think of absorption on the root ends as positive evidence of inability to return to normal.

I just want to suggest to you the idea that absorption on the root ends is an evidence of normal physiologic reaction in that locality. The absorption of root ends is the result of pressure from the capsule, but there could be no absorption if there were not living cells there to absorb. As long as there is active absorption, there can be, as soon as the pressure is removed, active reconstruction on that area so that the appearance of absorption is not necessarily an evidence that that area can not physiologically return to normal.

F. B. Moorehead (Chicago): Two or three phases of the discussion I wish to emphasize very briefly.

First, with reference to the incidence of danger from the character of infection, citing the closed cavity in one category and the cavity with the sinus in another. The secret and the answer is oxygen tension. We know oxygen has an effect upon the growth of the whole streptococcus group, and particularly that type found in root-end infections, and we may expect therefore, a decreased liability naturally of those root-end infections where there is communication with the external air through a sinus.

Attention has been called to the factor of trauma in relation to infection. As over against the value of drainage on the one hand and the removal of irritation on the other, it seems a curious thing that in our attempt sometimes at the removal of danger and liability of harm, in the effort at correction we do infinitely more damage than the infection itself is doing, and we can't too strongly condemn, without quarter, the practice of so-called surgical removal of teeth in which extensive incisions are made, trauma produced, and needless removal of bone is done. More damage is done in many of those cases, damage which is permanent, than the condition the operator is trying to correct.

The marked increase of scar tisuue with frequently inclusion of sensory filaments forever renders the patient uncomfortable. A traumatic chronic periostitis is frequently produced by injury to the tissue in extensive operations for removing teeth with a discomfort from which the patient gets no relief. Here again the Hippocratic doctrine might be invoked, namely: Be sure the thing you are about to do will not do any harm, whether it may do any good or not.

Just a word about the question of the unhealed focus. It is a very interesting thing to note the arrangement of bone under normal conditions between the cortical plates, that there is a fairly well defined order in nature for the building of subperiosteal bone, but there is no well defined order in the building of spongiosa. In the jaws which are perfectly formed and in which there is no infection, one will often find a spongiosa with very large spaces arranged more or less irregularly. In roentgenograms of normal jaws one will note now and then between the cortical plates a translucent zone which might be wrongly interpreted as an unhealed focus in an edentulous jaw requiring operative correction. Therefore, the evidence which is given through interpretation of the roentgenograms in edentulous jaws for the determination of unhealed foci is somewhat unreliable.

It is difficult to conceive of any focus of infection remaining in the interior of a bone with no communication with the surface. It is difficult to conceive of such a condition and while repair may progress slowly, in the process of time Nature will probably take care of any residual infection much more satisfactorily than any dental surgeon.

THE SURGICAL CORRECTION OF CONGENITAL CLEFT PALATE AND HARELIP

By JAMES H. CARDWELL, D.D.S., Boise, Idaho

(Read before the Idaho State Dental Society, Pocatello, Idaho, June 17-19, 1924)

CONGENITAL cleft plate, when accompanied by harelip, is perhaps, because of its conspicuousness, one of the most distressing deformities that mankind is heir to, and one of the first questions that the parent will ask is: "What is the cause of this condition?" As nearly as can be determined, the most common cause is found to be heredity.

Just what may have caused this a thousand or two thousand years ago is probably not known. Embryologists advance various theories. Some assert that it is caused by supernumerary teeth, and some believe that the tip of the tongue, during the development of the fetus, is elevated so that it keeps the maxillary bones separated and prevents union. Some men believe that syphilis is a frequent cause. I usually ask the parents if either have ever had syphilis but have not required that a Wassermann test be made. So far, I have always received a negative answer, and have had no reason, from results in operating, to doubt them. Many mothers and members of the laity firmly believe in prenatal impressions, and will say that the child is marked because of some fright or mental impression made on the mother during pregnancy. When a mother explains that she had some fright or saw something unusual we usually find that the incident occurred much too late to have had any influence, if that were a physical possibility, on the fetus, as this condition develops during the first two or three weeks of pregnancy.

In my own experience, I have had only four cases that we could not lay to heredity, and so far as the cause of the condition is concerned, I believe that one of two things is responsible: heredity, or the poorly nourished state of the mother during her pregnancy.

I have at the present time a case of a baby with a double cleft palate and harelip, the fourth baby the mother has had in five years. We can find no trace of a similar condition in the family anywhere, and I am confident that this baby's deformity is due to the run down condition of the mother.

When a baby has a cleft palate that involves the anterior maxillary ridge, and hard and soft palate, and that is accompanied by either double or single harelip, we are asked how soon surgical correction should be made, and what part of the work should be done first. These babies are poorly nourished, and before any operative measures are employed, it is essential to find a proper formula for the feeding. When the baby has regained its birth weight and is making a satisfactory gain, it is ready for operative work. This is usually possible between the third and ninth or tenth week. In most of my cases, I have been able to operate at about the fifth or seventh week. In cases in which we have a double cleft of the anterior maxillary ridge with protruding premaxillary bones, I defer operating until the child is about 3 or 4 months old.

In order to obtain the best results in these cases, it is necessary that we make

the bone correction first. I will quote Dr. Truman W. Brophy as to why this operation should be performed in early infancy and why the bone operation should be performed first.

1. The fissure in the lip enables the operator to gain more room in which to work. The approximation of the separated bones is an operation attended with difficulties far greater than those met in closing the lip, and when the bones are covered by the closed lip, they are increased.

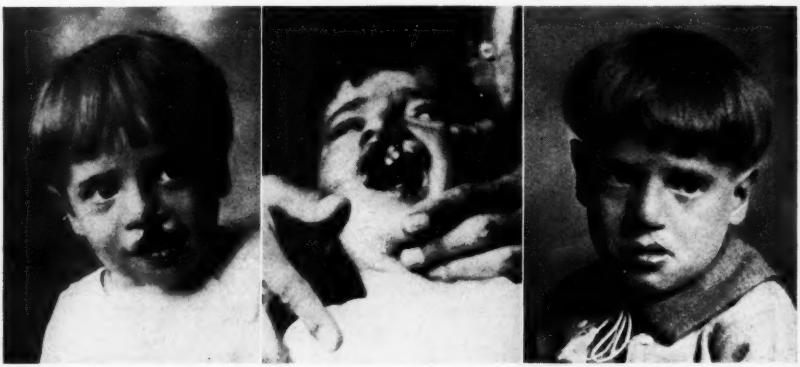


Fig. 1.—Left, appearance of patient, aged 2 years and 9 months, before operation, showing cleft of the lip; center, inside of mouth before operation; right, appearance of patient one year after lip operation.

2. The nose of a patient having single harelip and complete cleft palate, if not operated on, remains permanently diverted from the median line toward the side opposite the fissure. It is carried with the long side of the bone, which always protrudes somewhat, away from the center of the face. Thus, early operation straightens the nose at once and brings it into the median line.

3. The cleft should be closed before ossification of the bones is far advanced, and while they may be moved or bent without fracture. Bone at birth is about one-half organic matter; hence, it is not difficult to bend the bones and close the cleft a few days after birth.

4. The tissues unite readily, and the surgical shock following the operation is not so great if it is performed within the first month as it would be later in childhood. It is a well established physiologic fact that the nervous system of a child is not so well developed in early infancy as it is later. Therefore, young children usually react better. Later, the child would suffer a more severe shock. Moreover, apprehension is eliminated, and we all know that alarm and dread are among the most powerful factors in producing shock.

5. The operation in early infancy brings into action the muscles of the palate. These, therefore develop instead of becoming atrophied for want of use. Hence, a good velum is secured, with plenty of tissue; whereas, if the operation is delayed until later in life, the muscles cannot as surely be made to subserve the same purpose as tissues that develop through natural employment. It is well known that muscular tissue is more perfectly developed through action. The muscles of a cleft palate are not normally employed. By operating at a very early age, the

muscles are at once brought into use and their development is proportional to that of other tissues.

6. Following early operation, there is much less deformity, for all the tissues, bony as well as soft, are brought into normal relations and develop naturally and according to accepted types. When the operation is postponed a few years, it is very difficult to secure such results.

7. When the palatal processes of the maxillae are united, it will be observed that the development of the bones and the alveolar processes of the maxillae assume a form nearly or quite normal, and when the teeth are erupted, they will occlude properly with the lower ones.

8. The most important reason for making the early operation is that, when it is performed in early infancy, first, on the cleft hard palate, second, on the lip, and third, on the soft palate, a normal condition is established, which enables the patient to speak as children do who were born without this defect.

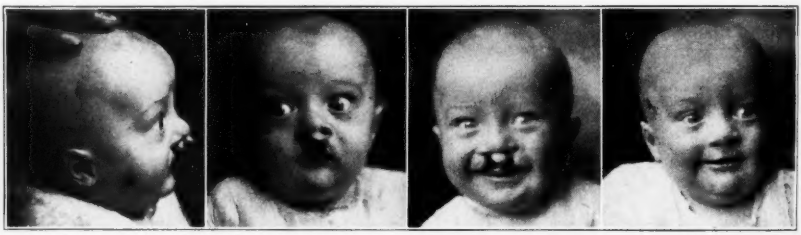
In all patients, there are irregularities of the incisor teeth joining the cleft alveolar process. This condition exists whether the individual is operated on or not.

To approximate the separated bones, it is necessary to use considerable force, and they must be immobilized in such position for about six weeks. The materials used for this purpose in the Brophy operation, the technic of which is strictly adhered to in my work, are lead plates and silver wires, and if they are used as Dr. Brophy advocates, we will have more satisfactory results than by the use of any other technic. After the patient is anesthetized, two double silver wires of No. 20 gage are passed through both maxillary bones and over the palate by the use of pilot sutures of heavy braided silk. The point of introduction of the first double wire is at or just back of the malar process; of the other double wire, a little anterior to this. One of the last two wires introduced is withdrawn from the body of the long bone to the middle of the cleft and passed through it again at a point nearer the end of the bone. Lead plates of No. 16 or 17 gage that have been made for the case are now threaded on the wires against the buccal surface on either side. Force is now applied by the thumb and finger and the bones are slowly moved toward each other. By grasping the ends of the wires with pliers and taking up

Fig. 2.—Appearance of patient, aged 6 weeks, before bone operation; center, appearance after bone and before lip operation, at the age of 3 months; right, seventeen months after lip operation (patient, aged 20 months).

the slack in the wires by twisting them against the lead plates, we are able to hold all the distance gained.

This process is repeated until enough distance has been gained to enable the bending of the long side of the bone until its end will meet the end of the short bone. At this time, it is necessary to scarify the edges of the palate bones that will come in contact, and to denude the ends of both bones of enough soft tissue and periosteum, so that when the parts are approximated, cancellated bone will be in contact with cancellated bone, and good bone union will result. Pressure is again made on the bones until they are approximated, the slack is again taken up in the wires by twisting against the plates, and at a point in the cleft of the lip, and the bones are immobilized. When completed, we have one pair of wires twisted against the buccal ridge on either side, and the twist of the other two are in the cleft of the lip. The ends of these wires are turned down so that they do not irritate the soft tissues. These plates and wires remain in the mouth for about six weeks after which time the surgeon is justified in performing the operation on the lip and defective nostril. The work just described is for a single cleft of the bones. The technic for the correction of a double cleft of the bones, with the complication that the premaxillary bones are extended, by the elongation of the vomer outward and upward against the tip of the nose, is almost the same as far as placing the lead plates and wires are concerned. But in these cases, in order to form a normal alveolar ridge, the vomer bone is split and the premaxillary bone forced backward and placed in its normal position between the two maxillary bones. Frequently, the premaxillary bones are excised, a practice that cannot be too severely condemned. Under no circumstances should they be removed, as their loss causes an irreparable deformity as well as the loss of the incisor teeth. Recently, I have had three cases of this type, all accompanied by double harelip, which is the usual occurrence.



a b c d

Fig. 3.—*a*, side view of patient, aged 8 months, before bone operation; *b*, front view of patient, before operation; *c*, appearance after bone operation but before lip operation; *d*, patient three months after lip operation.

The operation on the lip in one of these cases is perhaps one of the most delicate and most difficult operations in all plastic surgery, because the result hoped for in this work is to bring the nose into position and to construct a nostril that will be of the size and form of the one on the opposite side, and to bring the separated portions of the lip into approximation, so as to leave little or no scar and a vermilion border without a notch and with the necessary fulness to make a normal lip.

After carefully sponging off the lip and surrounding tissues, with a good antiseptic, an incision is made beneath

the lip and carried back over the maxillary bone to such a point as will relieve all tension and allow this ala of the nose to be brought into proper relation with the other. After this step, the flaps for lip construction are started by first removing the skin and mucous membrane of the lateral wall of the nostril for a short distance upward, and carrying the incision partially down into the substance of the lip. The surface of the nasal septum is now freshened and an incision made that corresponds very nearly to the incision in the lateral wall. A heavy waxed braided silk suture is now introduced into the lateral wall of the nostril and carried into the nasal septum; the broad and flattened ala is drawn into correct position and the nostril is shaped to conform with the one on the opposite side. It is now necessary that the operator decide how much tissue will be required from each side of the fissure to construct a normal lip. He then continues the incisions started in the two sides of the nostril into the substance of the lip to such distance as is necessary to obtain the tissue needed. A strong silk suture may now be passed through the corners of both flaps on the inner side and tied temporarily. Slight traction on the silk sutures will bring the borders of the body of the lip into near approximation. Interrupted horsehair or dermal sutures are now introduced, starting at the nostril and extending to the vermilion border. The first is tied, but the others are held back by hemostatic forceps. After all sutures are placed, the silk nostril suture is finally adjusted, and the tying of the horsehair sutures is completed from above downward. Great care must be used to see that skin approximates skin and mucous membrane, mucous membrane. The inner side of the lip is now sutured and the operation is complete.

In order to relieve any tension on the sutures, small cylinders are made by rolling thin cardboard on a large lead pencil and cutting to proper length for the case. Adhesive tap is wrapped around the cylinders, a strip of it being left so that the broad end will be in front of the ear on either side when applied to the face. Dressmakers' hooks of small size are sewed on the rolls and, when in position on the face, a lace of heavy silk on the hooks is used to draw the cheeks toward the median line, which pouts the lip upward; and all tension is removed.

When the child has reached the age of from 16 to 20 months, the closing of the hard and soft palate should be accomplished in order to insure more nearly perfect speech.

The procedure for this operation is as follows: The mucoperiosteum is raised up from the palate bones completely around the border of the cleft, and the tissues loosened from the distal border of the palate bones, which will usually allow the borders of the tissues so raised to meet in the middle of the cleft; and the margins of these tissues are carefully freshened. Two No. 22 gage silver wires are then passed through the separated portions of the soft palate, by the use of silk pilot sutures. Interrupted horsehair or dermal sutures are now introduced throughout the length of the cleft. After the tying of these sutures, lead plates of No. 22 gage of proper size are threaded on the silver wires and placed flat against the soft palate on either side of the line of sutures, and the wires gently twisted against them. The plates act to relieve tension on the sutures and render the soft palate inflexible during the process of healing.

These plates and sutures remain in position for about twelve or fourteen days, when they are removed.

DIET AND CHILDREN

By J. E. FRATZKE,* D.D.S., Minneapolis, Minnesota

DECAY of teeth is not a mere chance of unfortunate disability of the day; it is rather the most urgent and gravest of all diseases of our time, a more serious scourge than cancer or tuberculosis.

The diet of children first should be in accordance with: (1) a knowledge of the natural foodstuffs that have in past ages been habitually given to children; (2) knowledge of the artificial foods that are generally used, together with a recognition of their defects, physical and chemical; (3) recognition of the likes and dislikes of the child with regard to natural foods. Only one new foodstuff should be introduced into the dietary of a child at one time, and one should make sure that this agrees with the child before making further alterations. The intervals between meals should be increased according to the length of time required for digestion in the stomach, this alternation is to be regulated by previous knowledge, the appetite of the child and the needs of civilization.

The kind of food for which man is adapted is the same in all essentials as that on which he has subsisted for countless generations. It is now many years since the dental profession recognized that the complete temporary dentition indicated that the most suitable diet for a child was not soft food, but should be of a nature that demanded employment of the teeth and the jaws. This began to show how the transition from purely milk diet to the solid and varied diet suitable for children with a complete dentition should be brought about.

It cannot be too clearly emphasized that by far the most important factor in the production of dental caries in children is unsuitability in the character of the diet provided from infancy.

Sleeplessness may be met with at any age from infancy onward. When an infant is restless and sleepless during the day or night, the cause is almost certain to be improper feeding. The error usually consists in feeding the infant at irregular intervals, or it may be in giving him a milk mixture that is quite unsuited to his requirements.

When malnutrition reaches an extreme degree, we term it marasmus. This is most frequently seen during the first few months of life.

Many people are concerned about the diet children like, but I am sure that very few think much about choosing the foods that the body demands. If one always led an active life, he would naturally, to a large extent, choose foods, that constitute the proper diet.

We must know and understand the nutritional needs of the body, if we want to select scientifically our children's food and to know how unscientific methods break down the health of children.

The dietary needs are best understood by a study of the consumption of food. The body consumes from all the foods only six digestive products, which finally reach the tissue. The six substances

*Senior Student Thesis and Seminar Course, 1924, University of Minnesota.

are comprised of (1) water, (2) amino acids, (3) simple sugars, (4) products of fat digestion, (5) inorganic salts, and (6) vitamins.

The next question is why and how we must provide a diet that will insure the proper amount of each.

Water makes up two-thirds of the body weight, and in active tissues like muscles it is three-fourths the total weight. So important is the activity of water that we might almost speak of a distinct water circulation consisting of the passage of water from the earth into the body and its elimination from the lungs in the form of moisture; from the skin in the form of sweat, and through the kidneys in the form of urine. The amount of water excreted by an adult amounts to more than 2 quarts, while in children it may be a little less. Yet, in spite of this fact, a deficiency of water in their systems is a most common and serious fault.

Water may be obtained in the diet in a variety of ways. The greatest quantity is obtained through drinking water and other beverages, such as tea and coffee, but much is obtained from bulky foods, such as celery, lettuce and all other greens and vegetables. The amount of water necessary for proper waste elimination and for feeding the tissues in an individual of average weight is 4 or 5 pints a day. Of this, at least, 6 glasses should be drunk in the form of water itself.

The amino acids are the products of simple protein digestion. They are the important substances from which new tissue is built in the growing body in the child, and by which wornout tissue is replaced in the adult. These compounds are many times named the building stones of the tissues substances, because they recombine on the other side of the intestinal wall and in various parts of the body to form the typical body proteins.

The protein foods in most common use are meat, fish, milk and eggs, although much nitrogen is to be found in lentils, peas and beans, and in such wheat products as bread and macaroni. Enough of this type of food is required to supply nourishment for the growing or wasted tissue, but it has usually been found that when man is free to choose his diet to a considerable extent, there is an excess rather than a deficiency of protein. In India, where meat and fish are rare articles of diet, physical vitality is lessened and stature dwarfed.

The carbohydrates a child or grown person consumes are sugars and starches, the compounds of carbon, hydrogen and oxygen in which hydrogen and oxygen are present in the same ratio as in water. These are, in fact, very well adapted for complete or energy producing foods because when they are oxidized or burned in the body, both of these products are easily broken down into carbon dioxid and water, both of which are easily eliminated waste products.

The next type of food, which is fat, passes the walls of the alimentary canal in the form of soap, glycerin and fatty acids. Fat is a good reserve food since large quantities may be stored in the adipose tissue.

This next group is very important from the standpoint of infants as well as grown children. It is the inorganic salts of sodium, calcium, potassium, sulphur, iron and phosphorus. These are obtained in inorganic or organic form, but are most readily usable in the body when secured as organic salts, from plants and animal structure.

Most proteins are found associated with some of these organic minerals. Lettuce is particularly rich in potassium. Calcium is found in abundance in milk, and phosphorus in meat, yolk of egg and spinach, apples and asparagus.

The last group, which is the most important and least known, are the vita-

mins. It is quite evident that there are two types of substances, some soluble in water and others soluble in fat, which are very important and essential to the diet in preventing the onset of certain so-called dietary diseases. These vitamins are found in the husks of natural grain, in vegetative tissues, such as leaves of green vegetables, and in butter, olive oil and other natural fats.

Dietetics is generally called that branch of science that deals with the character, chemical composition, quantity and nutritive value of food materials which promote and maintain our life.

The function of food is to supply energy, to build and repair tissue and to regulate the body activities through the intricate process of nutrition.

Nutrition may be defined as the sum of the processes concerned in growth, maintenance and repair of the living body as a whole or of the constituents of its organs.

The noted physiologist Max Venoorn, has quite graphically and simply differentiated between normal nutrition, or physiologic nutrition, and abnormal nutrition, or nutritional balance, in the following sentences:

> When assimilation as divided by dissimilation equals one, then nutrition is normal.
>
> When assimilation is divided by dissimilation by greater or less than one, then nutrition is normal.

Any food material, then, that takes part in any of these processes of functions may be regarded as having nutritive value, and it therefore comes within the scope of dietetics.

Diet or dietetics, then may be broadly considered as the source of organic life and not only is concerned in growth and maintenance of the human organism, in health, but also is responsible for all deviations therefrom and is the foundational source of disease in all of its expressions.

In accordance, then, with the cardinal principle of medicine, which demands that any bodily evil must be corrected at its source, dietetics in its broadest sense becomes the foundation upon which preventive dentistry must be built.

Since dental disease is one of the most prevalent diseases afflicting civilized man—the greater the civilization, the more widely prevalent the dental disease. One of the greatest boons to humanity is the giving of proper diet to children so that the coming generation may have better teeth.

A child's diet may be right in quantity, but contain too little of one food and too much of another, i.e., be "out of balance." A balanced diet is one containing a sufficiency of each of these elements.

Amounts of each element required to give balance vary according to age, temperament, mode of living, energy expended, climate, etc.

For instance: Two children in a family partake of the same diet; one is susceptible to caries, the other immune, the amount of energy expended making the diet right for one and wrong for the other.

There may occur overingestion of a balanced diet, which Harold Clark has shown is more frequent when sugar, jams and sweetened desserts are taken freely. Kirk claims that overingestion of the carbohydrates makes it impossible for the blood, muscle and liver to store a sufficient amount of this element in metabolic form, with resultant overflow and the presence of metabolic carbohydrates in saliva. Carbohydrates are necessary to supply body energy, but if overingested, one satisfies only hunger without supplying other essential food elements.

Household science teachers, in preparation of table food, sometimes overlook the need of the teeth for adequate exer-

cise. The food should be of such form as to require thorough mastication without injury to the teeth—fibrous rather than hard.

Thorough mastication (*a*) gives better jaw development; (*b*) exercises the jaws, affording a proper blood supply to the tooth and surrounding tissue, and increased resistance to infection; (*c*) is the first step in digestion; (*d*) excites an abundant flow of saliva; (*e*) cleanses the surfaces of the teeth, the cleansing action of mastication being clearly shown in cases of unilateral mastication; (*f*) is a check on overingestion.

Doctor Clark of the Public Health Service in Washington, who has examined thousands and thousands of school children in different parts of the country, showed that 90 per cent or more of the school children in this country have from one to eleven cavities in their teeth. We also learn that the number of bad teeth very nearly parallels the other signs of physical inferiority. Nearly all of these imperfections tend to go with a high percentage of tooth decay, and most naturally decay of the teeth leads up to the improper diet.

All over England, we find instances of rickets. In the west of Ireland, where it does not pay to farm, they have no rickets. It means this: We have gradually changed our diet during the last half or three-quarters of a century to a type which is new in human experience, and that experience is one that has led us to a condition in which 20 or 30 per cent of the public school children are found to be underweight in a marked degree; in which they have all signs of malnutrition; in which 30 per cent or more of the young men were found unfit for military service, and in which tooth decay is second in importance as a cause of rejection for military service.

Last in importance in connection with the dietary is to see that it does not lead to a disturbance of our habits of diet, as the introduction of very liberal amounts of dairy products into it. These things, simple as they are, prosaic as this proposition may seem, rest upon a sound basis of animal experimentation which correlates with human experience the world over, and it is the most fundamental consideration in preventive dentistry. If we are going to have strong children with good teeth, we must first develop a satisfactory diet.

SURGICAL TECHNIC FOR THE REMOVAL OF IMPACTED CUSPIDS

By ROY S. HOPKINSON, D.D.S., Milwaukee, Wisconsin

(Read before the American Society of Oral Surgeons and Exodontists, Cleveland, Ohio, October 4-7, 1923)

THE etiologic factors responsible for the malposition of impacted teeth, the relation of impacted cuspids to many nervous disturbances, the question as to whether these teeth should or should not be removed and the many other factors involved would each require a lengthy discussion. We will confine ourselves more or less to the technical procedure necessary for the removal of these teeth.

Classification Based Upon Anatomic Relation

The largest class, by far, of impacted cuspids present themselves buccolingually to the adjacent teeth. The crown of the impacted tooth lies within the vault of the hard palate, while the root passes upward and buccally.

The second class of these impacted cuspids, which are located well within the buccal structures, do not present any portion of the tooth on the lingual surface. This type of impacted cuspids constitutes a very small percentage of the impacted teeth that have come under my observation within the last six years.

The third class of impacted cuspids, still smaller than the second, are those that are placed in an almost horizontal position directly over and sometimes between the adjacent teeth.

The position of these impacted teeth may, of course, vary a great deal, and the three classes just mentioned do not cover all cases. These teeth have been found just below the floor of the orbit, in the maxillary sinus, in the floor of the nose and in many other obscure locations, but they represent a minority of cases coming under the observation of the oral surgeon.

Not unlike the case of the lower third molars, the determination of the approximate location of the impacted tooth and its relation to adjacent structures is of vital importance. More than 85 per cent of the upper impacted cuspids are located lingually to the upper central, lateral or bicuspid teeth.

The lateral view taken at the cuspid angle will show the general characteristics of the impacted tooth, the size of its crown, the length and approximate diameter of the root and the curvature at its apex, if there is any. However, the location of this tooth in relation to its fellow members can be determined only by the proper roentgenograms, because the lateral view is not dependable for localizing a malposed tooth. The picture used for this purpose is made by directing the rays through the anterior portion of the nasal fossa, directly through the region included between the first bicuspid on one side and the first bicuspid on the opposite side. This picture gives us the location of the crown of the impacted tooth in relation to the adjacent teeth, the middle palatine suture and the anterior palatine foramen. A careful study of this picture is necessary before any operative procedure is attempted.

If infected teeth are present in the operative field, they should be removed

before any attempt is made to remove the impacted tooth. This not only facilitates the surgical procedure but lessens the possibility of subsequent infection in the wound.

It might be well to say at this point

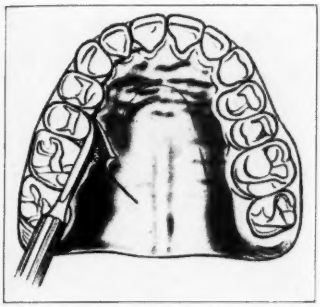


Fig. 1.—Special mucoperiosteal elevator used to carefully retract gingivomucoperiosteal flap.

that to sacrifice teeth in normal position and functioning properly for the sake of convenience in the surgical removal of an impacted tooth is seldom if ever justifiable.

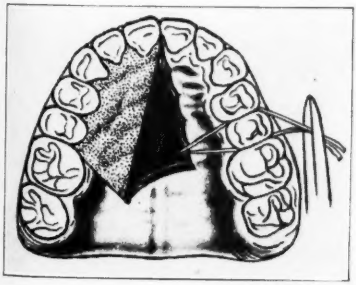


Fig. 2.—Flap retracted and held in position with suture exposing entire operative field.

Preparation of the Field of Operation

The head of the patient should be covered with a sterile cap or sterile towels. A sterile gown should be used to cover the patient's wearing apparel if the operation is performed in the office. The lips and face of the patient should be sponged with antiseptic solution. The mucous membrane should be dehydrated with sterile sponges, and a 3.5 per cent solution of iodin be applied previous to the injection of the local anesthetic solution.

Anesthetic

The method of choice is, in my hands at least, block anesthesia, except on the highly nervous type of patients. The technic here described requires careful, painstaking manipulation of tissues that are easily traumatized. The hasty surgical procedure in which gas-oxygen is employed usually results in unnecessary traumatizing of tissue, with the possibility much greater for loss of tissue through sloughing and infection. Nerve blocking permits the operator to take his time with the operation, giving him an opportunity to employ all of his skill.

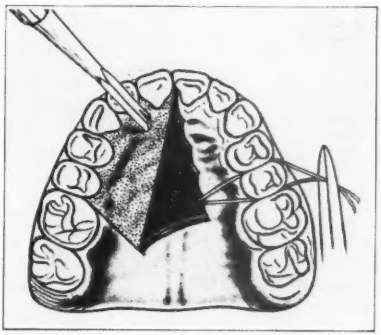


Fig. 3.—No. 6 Gardner chisel used as sounding instrument to give clinical check-up on position of tooth.

The injections made in the soft tissue on the hard palate facilitate the operative procedure by controlling the hemorrhage and thus giving a clear view of the operative field. When a bilateral impaction occurs, the entire operative field may be completely blocked by two second division injections.

A careful study of the blood supply of the hard palate suggests that the thin layer of mucous membrane covering it should not be deprived entirely of its arterial supply during the operation.

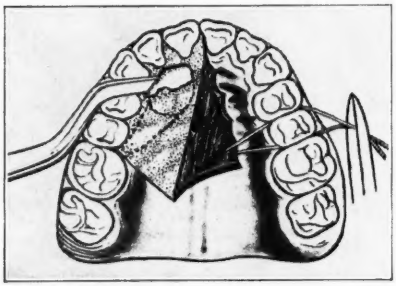


Fig. 4.—Exposing crown of impacted cuspid with chisel, removing bone over entire surface down to and including dento-enamel junction.

The technic, employed by some operators, consisting in making an incision a short distance lingually to the gingival tissue leaves a narrow band of tissue, almost entirely devoid of blood supply during the operation and for a considerable length of time after the tooth has been removed. The close proximity of

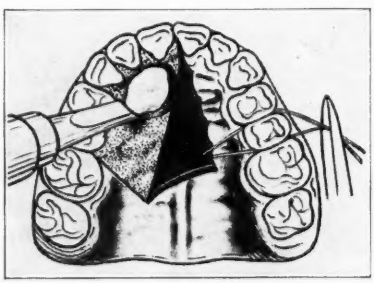


Fig. 5.—Excising of crown, directing chisel toward median line to protect other teeth from traumatism.

these teeth to the lateral and central incisors and the anterior palatine foramen necessitates a clear view of the underlying structures and bone. This cannot be obtained through a small opening in the soft tissue. Some rather disappointing results have followed the removal of impacted cuspids, and an investigation of the anatomic and histologic relation of the tissues, in the operative field, suggested a radical change in the technic.

Surgical Technic

The first step is an incision through the gingival margin of the upper first molar region, downward and backward to a distance midway between the gingival margin and the median line. The interseptal tissue is incised with a knife anteriorly as far as is necessary to

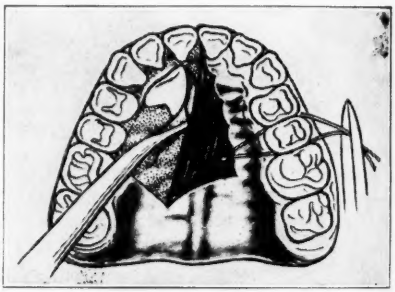


Fig. 6.—In using a small elevator to dislodge the crown, the bone in median line affords the best and safest fulcrum.

extend the flap. The special mucoperiosteal elevator is then employed for the careful retraction of the gingivomucoperiostal flap. When the gingival portion of the membrane has been carefully elevated, a larger mucoperiosteal elevator is used to retract the entire flap. Clinical judgment directs the distance to which this flap must be retracted. As the operative field is necessarily small, steel retractors are cumbersome and traumatize the tissue to an unnecessary degree. The retracted mucoperiosteal flap is fastened to the teeth on the opposite arch by a silk or catgut suture, the entire field being thus exposed, and all available space utilized for operating. This suture may be tied around the buc-

cal surface of the second bicuspid or first molar, or passed through the interproximal spaces and clamped in position, to the sterile cap or towel covering the head of the patient, by the use of Kelly forceps.

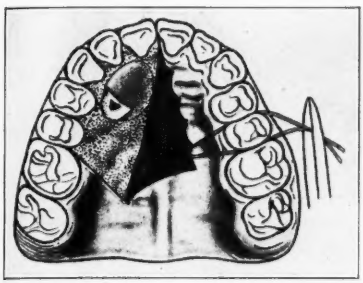


Fig. 7.—Crown removed and opening made in root with surgical bur.

A careful observation of the underlying bone is then made to determine whether any evidence of the impacted tooth is present either by a slight exposure of the crown or a slight elevation in the osseous tissue. The No. 6 Gardner chisel is now used to penetrate the compact bone to the depth of the impacted tooth. This chisel, which is used as a sounding instrument to locate the crown of the tooth, gives a clinical check-up on our preoperative roentgenographic findings.

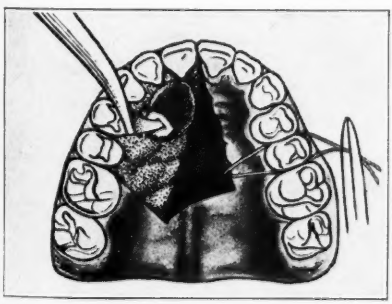


Fig. 8.—Elevator employed to advance root parallel with its long axis. The process overlying the root is used as a fulcrum, not the teeth.

The next step is carefully to chisel the bone away over the crown of the impacted tooth, exposing the entire surface of the crown down to and including the dento-enamel junction. The crown is then excised by a short, thick bevel chisel, known as a mastoid chisel. Five or six blows directed at right angles to the long axis of the tooth at the gingival margin will separate the crown from the root of the tooth. A small elevator, such as a Cryer elevator, is then employed to elevate the excised crown.

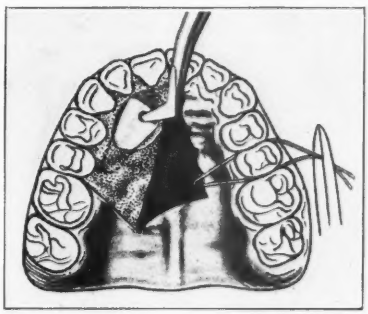


Fig. 9.—Root advanced into space afforded by excising and removing of crown.

In some cases, the No. 44 Ash forceps may aid in dislodging the crown. The bone toward the median line affords the best fulcrum for the application of the elevator. Pressure directed from the side nearest the teeth is seldom effective and often inflicts severe punishment on the adjacent teeth. I have known of cases in which the teeth and buccal plate have been so severely traumatized that death of the pulps in several teeth resulted from this traumatism.

The crown of the tooth is carefully elevated out of the osseous tissue, leaving a space in the bone about one-third the distance of the entire length of the tooth. The excised portion of the root is now clearly exposed to view. At this point,

a Rose-Bud surgical bur is employed to countersink an opening in the superior portion of the root. The elevator is again employed, being inserted in the countersunk opening in the root, and the proc-

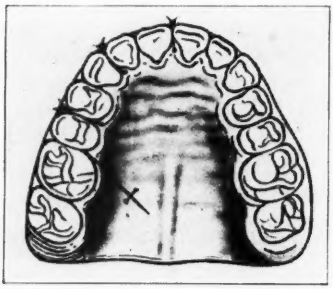


Fig. 10.—Sutures passed from lingual to buccal through interproximal spaces and tied on buccal surface.

ess overlying this root is used as a fulcrum to advance the root parallel with its long axis, into the opening made by the removal of the crown of the tooth.

By the use of this technic it is possible to remove a fully developed impacted cuspid with a minimum amount of chiseling of bone. This not only con-

Fig. 11.—Double impaction, showing proximity to anterior palatine foramen.

serves time but also lessens the possibility of traumatizing a large amount of tissue. It very frequently happens that the root of the impacted tooth passes backward and outward below and between the bicuspid teeth, its apex being very close to the floor of the maxillary sinus. As every precaution should be used to prevent the pushing of this excised root into the antrum, forceps should not be used on the root to remove it.

The impacted root is so deeply imbedded in the bone tissue in the first class of impacted cuspids that the advisability of cutting a window in the buccal plate and removing the tooth through this opening is seldom if ever possible and only complicates the operative procedure to an unnecessary degree. The removal of the second and third class of impacted cuspids can

Fig. 12.—Postoperative appearance of field.

and should be easily accomplished through the buccal plate.

After the root has been removed, the sharp edges of the bone are carefully smoothed with a file or curet. The cavity is irrigated with a hot physiologic sodium chlorid solution to dislodge all fragments of tooth and bone. The retracting sutures are now removed and the mucoperiosteal flap returned to its original position. The soft tissue is then gently but firmly massaged to stimulate circulation and assist in filling the cavity with a normal blood clot. The flap is now sutured to position with a No. 00 catgut interrupted suture. A small needle is used for this purpose with a curvature which conforms as nearly as possible to the vault of the hard palate. This suture is passed through the linguomucoperiosteal flap

between the interproximal spaces of the teeth, through the buccal mucous membrane, and tied on the buccal surface. Care should be exercised not to use too many sutures or too much pressure when the sutures are tied as this will constrict the peripheral blood vessels in the membrane and produce unnecessary sloughing of the gingival margin.

Fig. 13.—Diagnostic median line view, showing crown impacted cuspid lingual to lateral.

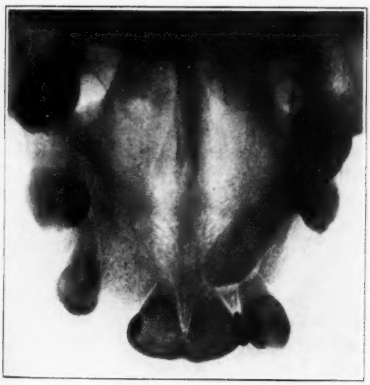


Fig. 14.—Median line view showing position of cuspid lingual to central incisor.

A careful observation of the principles of surgery in maintaining asepsis, during the operative procedure, makes unnecessary the use of gauze dressing in the wound, which heals by primary union. The sutures can be removed in four days.

Fig. 15.—Impacted cuspid located between nasal fossa and maxillary sinus.

Conclusion

After careful study of this technic extending over a period of more than five years and careful checking up of these cases by the use of roentgenograms, I take pleasure in presenting this technic, which not only conserves time, but conserves the tissues as well. There is as little traumatization of the tissues as possible to be consistent with good surgery, in removing one of these impacted cuspid teeth. We have been satisfied clinically by most gratifying results as reported by other operators.

ADDRESS OF THE PRESIDENT OF THE FEDERATION DENTAIRE INTERNATIONALE

By TRUMAN W. BROPHY, M.D., D.D.S., Chicago, Illinois

(Read before the International Dental Federation, at Luxemburg, August 6, 1924)

THE Fédération Dentaire Internationale was organized in 1900, in Paris, where it held its first meeting. Seventeen yearly meetings have been held.

Extensive preparations were made by our English confréres in 1914 for our London meeting, and our disappointment was great when it was so abruptly terminated. We were graciously received and cordially welcomed by Sir Wilmot Herringham, vice-chancellor of the University of London.

In 1915, a meeting was held in San Francisco at the time of the Panama-Pacific Exposition. It was attended by the president, secretary-general and a quorum of delegates. World conditions prevented the usual attendance of national representatives.

In the years 1916, 1917, 1918 and 1919, no attempt was made to revive the activities of the Federation.

In 1920, we endeavored to call a meeting, but all our efforts were futile.

In 1921, through the kind offices of Dr. Kirk, coupled with the loyalty to the Federation of the faithful Hollanders, Drs. Van Hasselt, DeBoer, Nord and others, we succeeded in assembling twenty-two representatives for a conference at The Hague, September 23 and 24, 1921. There it was resolved to hold an official meeting of the Federation in Madrid in 1922.

The meeting in Madrid was one that will long be remembered. It was presided over at the opening session by His Majesty, the King of Spain, whose Cabinet members attended him in a body. The address of the King, in gracious recognition of our humanitarian work, was received with great appreciation. The attendance of the Spanish Dental Federation formed a very interesting and desirable feature of the meeting. We received on one other occasion only, in 1912, recognition by the chief executive of a nation, when His Majesty, the King of Sweden, received our executive council in his royal palace.

In 1922, we met in Paris, and were to have been received by Premier Poincaré, but, in his unavoidable absence, the opening session was presided over by M. Maunoury, Minister of the Interior, thus conferring on our Federation the recognition and support of the French government.

The meetings in Madrid and Paris were attended with all the enthusiasm of the past and augured well for the future. The earnest work of the representatives of the various nationalities and the spirit of good fellowship that has marked every step of our proceedings assure us that the younger men who succeed us have, by their steadfast loyalty to the Federation, determined that the supreme cause which our noble departed brothers, Godon, Miller, Jenkins, Harlan, Cunningham and others,

gave the best of their lifework to build up and develop for the world's benefit, shall become deep-rooted in the hearts of the profession.

The Federation meets for this first time in its history in the Grand Duchy of Luxemburg. Our roster shows that Luxemburg holds the highest percentage of members in this Federation in proportion to its population. This fact is evidence that the profession of this country is earnestly engaged in progressive dentistry, in the advancement of oral prophylaxis and in upbuilding and preserving the health of its people.

The creation and life of the Fédération Dentaire Internationale has been the result of untiring efforts on the part of men who were inspired by a sense of duty to their fellowmen, in alleviating human suffering and elevating the standard of the profession to the advanced plane that it now occupies.

It was the purpose of the founders to meet in various countries so that the influence of the organization might be widely disseminated. The wisdom of their course is apparent. All members of the dental profession throughout the world who are interested in the public health service must be anxious to assist in the cause of dental education and the education of the public in oral prophylaxis and hygiene, thus improving the health and usefulness of their fellowmen.

The medical profession was for a long time embarrassed by the perplexing problems that confronted it when congresses were being organized and, following our example, have established a central bureau. It is located at The Hague.

My distinguished predecessor, Dr. W. B. Paterson, said at London in his address as president of the Fédération Dentaire Internationale: "We should all use our best endeavors to make this congress a success, despite the adverse conditions; for medicine and science know no politics and no nationality and must steadily pursue their way under all conditions and in all circumstances. The friendship and mutual regard fostered by these meetings enable us to meet as brethren in a common cause, whatever our country or our national differences may be."

When the depths of grief fell on a people, when all about them their loved ones were perishing; when the husband and father folded his hands in approaching despair and appealed to his Creator to send an angel of mercy to save him and his beloved wife, children and friends from the further pangs of hunger and starvation, his prayer was answered. The message fell on the ear of our active, untiring, enthusiastic and humanitarian secretary-general, Dr. Floristan Aguilar, who learned of the appalling conditions in Russia and brought the information before the Federation at Madrid. He suggested that one of our members go to Odessa, study the conditions and report later. The secretary-general magnanimously volunteered to go. He was delegated by the president to visit Odessa and report his findings later. He was accompanied by Mrs. Aguilar, whose valuable assistance contributed largely to the results of his work. We hereby express to her our appreciation and thanks for her aid.

Secretary Aguilar will report at this meeting on the results of his sojourn in Russia and the response of the profession to the appeal for relief. While our secretary was in America raising funds for Russian relief, another world calamity occurred, falling on our brethren in Japan. Assistance was promptly given to our Japanese colleagues. (A report will be made on the Japanese situation.) The pleasure experienced in contributing something to a fund to encourage and help those on whom a great misfortune has fallen is one of the most joyous and gratifying in life.

The evolution of dentistry is a fascinating history of growth and improve-

ment, though today we have not time to review it. The regard accorded our profession by such an institution as the Carnegie Foundation is voiced by Dr. W. J. Gies, one of its representatives and head of the department of professional education, as follows:

> Dentistry has been traditionally a means of repairing and perfecting the mechanism of mastication, inducing oral comfort, correcting maxillary and palatal deformities, maintaining normal vocal enunciation and retaining or restoring facial comeliness. Dentistry has also become, and is now primarily, oral health service.
>
> Dentistry is one of the most varied, useful and responsible divisions of health service. Exceptional difficulties attend its successful practice. These exactions are due to concurrent medical, mechanical and esthetic demands upon it.
>
> Considered as a whole the practice of dentistry is, in effect, a combination of medicine and mechanics, largely on the basis of fine art, applied to the teeth and mouth directly. Oral health service, with correlative systemic health-service, is the fundamental purpose of the practice of dentistry. Mechanical procedures are its chief ways and means. Artistic oral restorations and reconstructions are its esthetic achievements.
>
> Medicine, mechanics and art constitute the tripod on which the whole of modern dentistry rests. Pull away one of the three legs of that tripod and dentistry ceases to be itself.

It is gratifying to find among great educators a clear understanding of the breadth of the dentist's vocation.

Dentistry today has three great avenues leading to broad fields of service to humanity: oral hygiene, cooperation with the medical profession and dental education; "and the greatest of these" is education.

Oral Hygiene

Dental and oral hygiene has claimed the attention of our Federation and been one of the foremost commissions throughout the period of our existence. Inseparably associated forever with world work in the field of dental hygiene will be the name of our esteemed fellow member, Dr. Ernst Jessen, who was the first to recognize the importance of a school dental clinic. He organized and maintained such a clinic in Strasbourg, and, from the beginning of his work, the dental profession became interested and broadcast the gospel of dental hygiene around the world.

From this has grown a great plan, not yet universal, not yet well organized and coordinated, perhaps, but growing and developing. The plan is to educate the people on the subject of the importance of the oral cavity and the care it should receive. This is done, properly, by a campaign of newspaper articles, under the profession's direction, the most effective of which do not dwell on the symptoms of disease, but stress prophylactic measures; by compulsory dental examination of school children and recommendations to parents regarding service needed; by free dental clinics established by municipalities or by philanthropists who have founded and endowed great dental infirmaries, such as the Forsyth Infirmary of Boston and the Eastman Infirmary of Rochester; and by the personal advice of dentists and physicians in their regular practice.

Today, the dental hygienist fills an important position among the workers in preventive medicine, preventive surgery and preventive dentistry, but many of these measures begin too late.

Every woman, during the period of gestation, should receive the services of a physician who will, by suitable diet maintain normal nutrition, if possible, thus building vigor in the unborn child. Hygienic care of the baby's mouth should commence not later than the beginning of the sixth month, when the first teeth erupt. Daily care thereafter is necessary and semiannual appointments should be made with a dentist throughout life.

It is well known by every practicing dentist that, at the school age, the sixth year, we oftentimes find the deciduous teeth almost completely destroyed by the progress of caries. If thorough examination of the teeth of infants and young

children were practiced and parents were impressed with the benefit the child receives; and if the deciduous teeth were well cared for and preserved by the skill of the dentist until the time arrived for the eruption of the permanent teeth, the development of the jaws and teeth would be normal, the better quality of permanent teeth would be assured and the development and well-being of the child would be physiologically advanced before the school period began. Following this, school examinations, which should always be made obligatory, would prevent many a child from becoming a physical wreck.

Cooperation

Dr. John B. Deaver, emeritus professor of surgery of the University of Pennsylvania, writes: "Cooperation is becoming more and more recognized as essential to the success of the medical profession in all its branches and ramifications. There has hitherto been not so much a sharp line of distinction between dentistry and medical practice as the entire absence of relationship between the two—a total divergence of objectives. The last decade or two, however, has seen a change in the respective attitudes of physicians and dentists towards each other, to the advantage of each profession and the patients."

Heretofore, the training of the medical practitioner has not been such as would lead him to regard the oral cavity, and particularly the teeth, as a major factor in producing bodily disorders. He sought for the cause of the trouble through examination of the blood, urine, etc., and if diseased conditions in the oral cavity came to his attention, he regarded them as sequelae of the systemic disturbance and not as the origin of the disease. Dr. Deaver further states:

> My colleague and friend, Dr. Jackson Daland, has stressed the importance of focal infection, particularly of the teeth, in connection with the solving of the riddles arising in internal medicine. He further states that "no surgical clinic is complete, and its patients have not gotten the benefit of the best that can be done for them that does not have a dental surgeon who is a member of and cooperates with the surgical staff.
>
> The multiplicity of lesions which may occur from a small alveolar abscess is most surprising. A chronic appendicitis may result, which may in turn cause chronic mesenteric lymphadenitis and through the lymph and blood stream may be the cause of infections of the liver, bile ducts, pancreas and subdiaphragmatic tissues. We are well aware that every epidemic of sore throats brings forth its crop of acute appendicitis.

Comparatively recently, Sir William Hunter issued a statement that a great number of human ills resulted from chronic oral infection, citing many instances of cures following a clearing up of the mouth. This statement followed a period when it was the fashion to attribute almost every sort of malady to "diseased" teeth. Dr. C. N. Johnson recently pointed out that the infection to which Hunter referred—that following irritation by badly fitting crowns, bridges, etc.—was not at all the form that became the popular target. Dr. Johnson further says, in substance: "Abscesses at the apices of roots of teeth were suspected whenever any sort of infection appeared. The idea gained ground that a pulpless tooth was a 'dead' tooth, and anything dead should be eliminated. Patients were sent by their physician to a roentgen-ray laboratory for roentgenograms of the teeth and supporting structures; the operator indicated on the films certain teeth as 'dead' or 'abscessed' because of darkened areas around the ends of roots; and the physician forthwith sent him to an exodontist with instructions to remove the indicated tooth or teeth."

In following this program, the physician overlooked one step that would have obviated the tragedy of unnecessary extraction of countless sound, serviceable teeth. He failed to consult with a well-trained dentist. If he had done so, he would have had the benefit of a clinical examination, which should always be

coordinated with a roentgen-ray examination; he would have had the judgment of one who knows the histology, the physiology, the pathology of teeth, and the appropriate treatment. And the patient, who is, after all, the one most concerned, would have been saved many of his teeth, in all probability.

Nor have physicians been alone in this devotion to one idea. Some dentists were quick to exaggerate the importance of dental infection and to charge to it many cases of arthritis, neuritis and other diseases and take unto themselves the credit of cures without assistance from the medical profession.

I regret to state that the unnecessary and appalling sacrifice of teeth, extracted by dentists on the advice of physicians, marks a dark, dark period in medical and dental history. This fact is the outstanding retrograde movement in these professions in the last quarter century.

Happily, saner vision is coming to all. The physician acknowledges the more thorough information of the dentist in his own field, the dentist recognizes the wider outlook and understanding of the organism by the physician, and each man's training and experience supplement the other's. More cooperation of the dentist with the physician in health service will lead to a better understanding of dental pathology on the part of the physician. He will recognize the importance of prophylactic measures and prescribe them; he will recognize the importance of preserving the teeth and, instead of advising extraction, he will urge conservatism in all cases where dental abnormalities are amenable to successful treatment.

The most important result to the public in this cooperation will lie in the better understanding of the diseases of the teeth and diseases associated with them on the part of the physician and in the better general understanding of health service on the part of the dentist. From this union, and from this only, can we hope to reach the high point of service to those patients who place themselves in all confidence in our hands; and that service lies in prevention rather than cure.

Another illustration I quote you from Dr. John B. Deaver, and what is true of this is true of other diseases:

> The possible prevention of that arch enemy of middle age and beyond—oral cancer—is within the domain of the dentist.
>
> The origin of cancer is still a matter of inquiry and research; its solution a matter of the future—let us hope not too distant future. If there are degrees of darkness in this dark chapter of medical annals, it may well be said that the darkest pages are those which concern malignancy of the buccal cavity. Cancer of this region is noted for its virulence, not only because of the richness of the blood and lymphatic supply, but also because of its intimate relationship to vital structures. Crile in a study of the literature pertaining to cancer of the head and neck showed that, in 4,500 reported autopsies, only one per cent had secondary foci found in distant organs or tissues. Therefore, when death results from cancer of the head or neck it is because of local or regional growths. The lymphatics about the neck form an almost impassable barrier through which cancer cells rarely penetrate. . . . The relation of pyorrhea alveolaris as a forerunner of cancer of the alveolar processes must not be minimized. . . . It behooves us, therefore, to be on the alert to do all in our power to prevent the development of cancer or other malignant neoplasms within the mouth, because here we are dealing, especially at an early stage, with a lesion which, as far as localization is concerned, is unique, since every portion of the barrier is accessible to the surgeon.
>
> We all know that malignant degeneration of a histologically benign growth is a matter of record. We all know, likewise, that cancer results from prolonged irritation where the tissues have lost their powers of regeneration. Thus in the mouth where infection abounds in every conceivable form we have a soil prepared, even inviting malignant degeneration. The soil must be properly fertilized before growth can be assured. . . . It is for the dentists to spread the information that "irritation spells degeneration." Good dentistry can and has eliminated a percentage of cancers of the jaw and cheek.

Therefore, one step in prevention of malignancy is active and continuous propaganda for mouth hygiene.

EDUCATION

It is quite likely there never has been so much agitation in the world as at the present time regarding the course of study best suited to prepare a student for the duties of the profession of dentistry. Both medical and dental leaders have given much time to the subject. I believe that all academic work required for admission to a professional school should be finished before a student matriculates, and I further believe that the majority of the teachers in medical and dental schools are of the same opinion.

When the first dental college in the world, the Baltimore College of Dental Surgery, was organized, in 1839, the founders made strenuous efforts to have it associated with the medical college, but the medical faculty declined. This necessitated the establishment of an independent dental school and the creation of a dental curriculum. The school was controlled by men of very high character and laudable purposes. They conducted this school with credit to themselves and with the approval of the members of the profession.

In our dental schools, constant improvements have been made. We find great progress during the last decade. Courses of study have been lengthened. Higher educational requirements for admission have been demanded. More thorough instruction is given in the field of dental pathology and surgery, and numerous laboratories have been established for scientific research. In the United States, there are five national laboratories and in Canada one. The secretions of the mouth; the influence of pathogenic micro-organisms locally as well as constitutionally; the question of foci of infection leading to arthritis, neuritis, appendicitis, gastro-intestinal ulcers and many other maladies are now receiving careful investigation and consideration on the part of dentists who have been thoroughly qualified to teach research work.

As far as dental students are concerned, the subject of pathology was long the one branch of the dental curriculum that did not receive the attention that its importance demands. This deficiency has been corrected and recognized by medical men. This recognition was forcibly expressed by an American physician within the last year who, in commenting on the subject of medical education in America and incidentally on American dental education, made, in substance, this statement: "The advance in dental education during the last quarter century has been phenomenal. The dentists of our country have created a curriculum so broad that it includes all departments of the sciences and arts which can apply in any way to the progress and usefulness of dentistry. And this without entering in detail into the study of gynecology, obstetrics, orthopedics, dermatology, etc., which, while interesting, do not contribute to the preparation of a young man or woman for the duties of the dental practitioner."

Far better would it be for him to devote more time to the study of the abnormalities of the mouth and associated parts, the technic to be found in the prosthetic laboratory and the intricacies of maxillofacial deformities, prosthesis, oral surgery and orthodontia than to spend years of time in acquiring a knowledge of subjects he cannot use in the practice of his profession.

Every well informed dentist knows that a student may confine himself exclusively and faithfully to the study of orthodontia extending over a period of two years, at the expiration of which time he would not be an expert in judgment nor a master in this special field. Training in a high grade school of technology, the study of the application of force and the laws of leverage, etc., would be of far more value to the dentist than a knowledge of dermatology or obstetrics.

Nearly all the work in the building up of the dental profession to its pres-

ent standing in the world has been done by dentists, outside the curriculum of the medical schools. But today men of great ability interested in educational pursuits, are divided on the question as to whether dental educational work should be fused with medical training and carried on with it.

If we undertake to analyze the courses of study in both medical and dental schools, we will find that the student in the medical school who is preparing himself to practice medicine is giving little or no time to the vast field covered in the curriculum of the dental school, because the medical school makes no provision for it. Most conspicuously confronting us is the problem of dental education. It especially concerns the people of the world and is the consideration of the dental profession particularly. We find no great amount of interest in this problem by the faculties of the medical schools—if so, that interest has not been generally discussed in the literature of the profession. It seems to me that this problem, how best to supply the needs of the people in preserving health, from a dental point of view, must be settled by the leaders in dental education. The problem of dentistry, today and in the future, is the problem of dental education.

The management of dental schools by medical faculties has always been a failure, and this is easily accounted for: how could one expect a medical faculty to *teach* that which they have never had an opportunity to *learn?*

What a dental student needs in preparation for his lifework is to learn the *vocation of a dentist.* It is an important part of a dentist's mission to cooperate with the family physician on dietetics as applied to the mother and unborn child, thus developing in the child greater vigor and, with it, better dentures. The dentists should induce medical men to urge on the families in their charge the importance of carrying out oral prophylactic measures; but let it be remembered that all of the care that can thus be bestowed cannot always prevent the disintegration of human teeth by caries, often followed by serious complications. More than 80 per cent of the people of the world are afflicted with diseases of the teeth and their surrounding structures. They are calling on those who treat human ills for relief; seeking for those skilled in the science and art of dentistry to cure them and save them from the loss of their teeth. They want the kind of treatment that will result in curing their diseases, without unnecessarily taking from them important, useful organs.

To whom shall they appeal for relief? To the practitioner of medicine whose dental training has not been long enough to acquaint him with the underlying principles of dentistry, or to one who has dentistry with all its varied departments at heart and who has been taught during four years of dental college work, the sciences and arts that apply to the dental profession? To save the teeth there must be dental operators whose skill and judgment should be well developed by careful training during a period sufficiently long to prepare them for the never-ceasing work of combating and arresting dental caries, a service that will constitute the major portion of their lifework in the performance of their duties as dental practitioners.

If medicine is, as usually defined, "The healing art in all its branches" and if, as we believe, diseases of the teeth are more prevalent than any other diseases of the human family, the institutions of medical learning should demand that every student shall possess the same amount of knowledge of these diseases and the diseases associated therewith and dependent on them for their origin as the student acquires of the diseases of other parts of the body.

The many years of time and study required to complete the course in the medical college and hospital work, prelim-

inary to the long dental course, makes such a training unnecessary, impracticable and a loss of valuable time, which would be very much better employed in preparation for the care of his dental patients. Besides, digital skill is much better and far more easily acquired when one is young. To those dental graduates who intend to devote themselves to oral surgery, especially major oral surgery, the medical qualification is essential.

As Dr. Julio Endelman, editor of the *Pacific Dental Gazette*, puts it: "It has been the observation of many dental teachers that graduate physicians who undertake the study of dentistry seldom attain the manipulative skill of the average dental student who has been under educational supervision by the dental school from the inception of his dental studies."

In the progressive country of New Zealand, medical students are not permitted to graduate in medicine until they have had one year in the study of the dental organs and the treatment called for in their diseases. In America, medical students do not study dental pathology, and according to my observations in Europe, where I have spent a portion of at least twenty summers, the conditions are the same.

When the medical colleges make it obligatory on their students to take a full course in dental histology, physiology, anatomy and pathology and to learn the course of treatment called for in the management of the innumerable diseases incident to the teeth; when they take up and become familiar with the work of oral surgery and make it obligatory; when the dental colleges establish hospitals and require a course in practical oral surgery—the surgical tragedies which are now being enacted will be displaced by the logical course of *eliminating disease* and *preserving normal tissue*.

When the physician, surgeon and dentist cooperate in practice; when the angel Hygeia, in her beneficence, spreads her bright wings over the cradle, over childhood and youth; when science, whose efforts are ever faithful in the interest of all, faces disease, the arch enemy of mankind, and stays its progress by a barrage through which it cannot pass; when deliberation and reason shall become a substitute for the horrors of the bayonet; when the gospel of love shall take the place of the spirit of hate—the races of men shall meet in a vastly improved world, in one common brotherhood, live a tranquil life and verily say with the Great Master:

"Peace on earth, good will to men."

CONSERVATIVE SURGERY

By EARLE H. THOMAS, M.D., D.D.S., LL.B., Chicago, Illinois

(Read before the American Society of Oral Surgeons and Exodontists, Cleveland, Ohio, September 4-7, 1923)

ATTENTION will be directed to a few phases of our work in which conservatism proves of special benefit to the patient.

When the entire cross-section of the mandible has become necrotic, so that removal of this bone would leave a marked deformity, fixation plus drainage, with the sequestra left in situ, will often result in a healing without deformity. The sequestra will hold the periosteum in its natural position and contour, and a new bone will develop accordingly, after which the sequestra may be removed.

If a roentgenogram reveals a large radiolucent area, apparently involving several teeth, we should not anesthetize, remove all the teeth apparently involved and then curet the diseased or cystic area. The wise procedure is to open the area and curet it first, then to extract whatever teeth are seen to be involved. Quite frequently, it will be found that an area apparently involving four teeth will actually involve only one tooth and pass to the lingual surface of the other (Figs. 1-3).

If a roentgenogram reveals a granuloma around the end of the root of a pulpless tooth, and this granuloma has extended so far as to absorb the bone around the apex of an adjoining tooth that on test proves to have a live pulp, the pulpless tooth should be extracted without curetment, or only the area around the apex of the pulpless tooth be curetted. A check-up with the roentgenogram several months later will usually show complete recalcification around the apex of the other tooth.

The mere fact that a roentgen-ray examination or transillumination shows that one antrum is more opaque than the other should not determine one to send a patient to the hospital to be operated on. There may be several causes for this, the most usual of which is the fact that the bone on the one side is much thicker and denser than on the other side. Therefore, it is always a wise precaution to wash out the antrum and see whether there is actually pus in it before making a positive diagnosis.

Acute abscesses extending deep into the neck below the chin can often be opened and efficiently drained through the floor of the mouth, even in cases which have progressed so far that, at first thought, it would appear that an opening must be made externally, with resulting scar formation. Opening through the floor of the mouth will often take care of an abscess, the swelling of which has extended almost to the clavicle. The same may be said of abscesses behind and below the angle of the mandible, these being reached by dissecting the masseter muscle from the bone to the posterior border and then, with a blunt instrument, opening downward, inward and backward to the abscess, even though it extend posterior to the lobe of the ear.

As regards the problem of the

impacted upper cuspid, we should not be too hasty in advising its surgical removal, with the idea that it cannot be brought down to

Fig. 1.—Cuspid not involved.

place by orthodontic methods. Removal of such a tooth that might have been brought down to place will leave the patient with a permanent malocclusion, which might have been prevented if we had a greater knowledge of the skill possessed by our modern orthodontists.

It is remarkable how an impacted upper cuspid, even though lying horizontal in the palate, may be moved down and out to almost a normal position by simply exposing the crown, chiseling away the bone surrounding it and keeping iodoform gauze packed by the edges and as far around, to the under surface of the crowns, as possible. The tooth becomes very loose, and each time it is packed, the crown moves down and out an appreciable extent, until it is entirely exposed, so that a band may be cemented on it.

It is advisable to have good roentgenograms of all areas on which we are

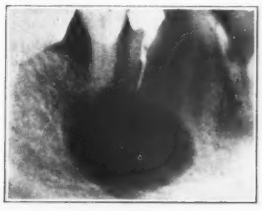


Fig. 2.—Second bicuspid not affected; inferior dental nerve preserved during operation, and no subsequent anesthesia.

going to work, even though it be supposedly a simple extraction. We all know of the number of unexpected conditions that arise in our work, and a great many of these would be better taken care of if we always had roentgenograms taken.

In reading roentgenograms we should be careful not to mistake defects in the films for pathologic conditions. Often, we will find defects simulating fractured roots (Fig. 5), fractured mandibles and various other conditions.

Fig. 3.—Cyst involving bone to the lingual of the lower anterior teeth; inferior dental nerve preserved during operation, and no subsequent anesthesia.

Often in roentgenograms of the upper first or second molars, there appears a round area over the lingual root, which is a normal condition

(Fig. 6). Care should be taken not to confuse such an area with a pathologic area. We often find that the bone in

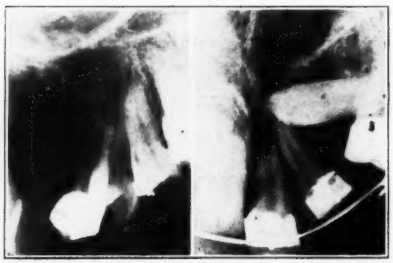


Fig. 4.—Cuspid placed in almost normal position in nine months.

the region of the upper lateral incisor looks much darker than the surround-

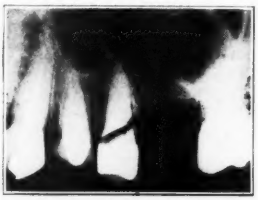


Fig. 5.—Defect in film.

ing bone. This is mainly because of a fossa in this region and varies with the

Fig. 6.—Lingual root normal.

amount of penetration of the roentgen-ray machine. This darkness is sometimes marked, and apparently circumscribed, and we should be careful not to mistake it for a pathologic condition (Fig. 7). If the buccal and lingual periosteum is

Fig. 7.—Two pictures taken same day with different penetration.

taken away at the time a tooth is removed, the area may granulate in with fibrous tissue, which may never become calcified, and such an area will always

Fig. 8.—Localizing by inserting a second needle.

look black in the roentgenogram. These areas should be watched for, and not confused with pathologic conditions.

In cases in which a hypodermic needle has been broken off in an attempt to block the inferior dental nerve, the patient will be saved a great deal of cutting, with consequent postoperative trouble, and the operator will be saved a great deal of time by the insertion of another needle and taking the roentgenogram, not of the one side alone but of both sides of the mandible, overlying one another, directly horizontal in the area, a roentgenogram being taken with the mouth held open. The broken needle can be localized from the second one (Fig. 8). Also, a region in an edentulous jaw can be localized by the insertion of a small hypodermic needle, a roentgenogram being taken with the needle in place.

When a cyst or granuloma has destroyed all the bone around the inferior dental nerve, we should not blindly curet out cyst, nerve and everything in sight. By carefully peeling the cyst wall away from the nerve or dissecting the granuloma away from around the nerve, the nerve can often even be left hanging across the cavity with no support. If it is preserved in this manner, the time of anesthesia may be shortened to a few days, or at the least a few weeks; whereas, if the nerve were destroyed, it would last for several months (Figs. 2 and 3).

Regardless of the disrepute into which root-resection has fallen in some quarters, as long as we still believe in retaining pulpless teeth, there are still indications for root-resection. A large percentage of these operations, if carefully performed, will place the tooth in as healthy a condition as that of most pulpless teeth.

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Editorial

WHAT IS RESEARCH?

The title of this editorial needs justification. In this age of research, the question is almost an affront. Could anyone with professional associations need a discussion of such an issue? The conviction has grown, however, that many do need the proper answer to this query—and so the editorial. A certain flippancy seen in the use of the word, a loose application of the term to unworthy production, an evident unfitness of many who would dignify their labors with this appellation provokes these paragraphs. So often have alphabetical processes been dubbed research and has space been asked for their descriptions in journals that the question has seemed to need an answer.

For years, universities have regarded research as their prime objective. Vast sums of money have been spent for its development, and scholarship has been carried to a high degree for its maintenance. With profound justification, educators say teaching is not the major function of great institutions but the discovery of such facts as will minister to life. How well and how often this has been demonstrated does not need to be detailed, but in every department of human interest research has justified itself whether allied with or independent of universities. The figure that would tell the increase of material wealth that is the direct result of research in university laboratories would be interesting although too large for ordinary comprehension. No industry of any moment attempts to operate today without a budget devoted to experimentation and research for new combinations and effects that will advance the service of its products to mankind. A moment of reflection will show that the tremendous advance in the past twenty years in almost every field of human endeavor is the result, not of accidental findings, or of inspirational illumination or of dreams in the night, but of a persistent ordered search for facts. Research is the vital breath of our civilization.

The schools conceive the object of research to be the discovery of

previously hidden truths, never doubting that such will find their own application. Nor are such truths classified as great or small. Each has a high place in the esteem of the man who seeks it. Sometimes, it seems that the results attained in no way justify the time and expense given them; often, it appears that problems are devised and procedures developed only to justify a degree. The laboratory may produce now and then pedants who have no interests in human contacts; or perhaps the schools may stress the subject so strongly that quantity production and consequent superficiality is the result—but still research is the most precious university function. Whatever criticisms may be made, the fact remains that research is the noblest offspring of the university, the greatest contributing process to human welfare, the most valuable asset in human endeavor.

At the present time, the obligation to carry out research has assumed the proportions of a moral responsibility and is therefore unavoidable. In the realm of economics, a necessity of any sort calls for experimental activity. There is need of instant communication—and lo! the telegraph is wrought. A similar instance of communication with greatest utility, and the telephone becomes a household commodity. A conviction that the air tempted conquest and proffered service brought the airplane into being. The farm, the mine, or the factory is halted by some inadequacy, and scholarship is called to the rescue. In the health field, the laboratory responds similarly. A pall of dread darkened the tropic skies and science undertook the task of raising it. So malaria was banished, and the bubonic plague and yellow fever. In turn, others are being assailed, and humanity is given a freedom that no supplication could bring from the skies. In the oral cavity are found diseases still defiant and incurable, the most widespread of all ills known today. Research for their cause and cure is demanded as by the voice of Jehovah, and a moral weight overlies any sophistry or indifference or ignorance that gives them toleration.

The qualifications for research are basic character elements, plus the best educational equipment. A divine curiosity has made some men notable in such endeavor many times in history. As a general undertaking or vocation, research is only of recent appearance. Great contributors to knowledge, whose resistless inquisitiveness impelled them to investigation, have always added to their curiosity the best equipment their times afforded. An old gardener once told an English woman that seeds germinated better when planted in the first quarter of the moon than when planted in the dark of the moon. Curiosity immediately said, "Is that true? and if so, why?" A profound knowledge of biology and related sciences enabled this woman to discover a far-

reaching and practical truth in what was previously no more than a superstition. This union cannot then be broken: recognition of phenomena and education sufficient to analyze them.

An inherent sense of honesty or, if not an inherent one, one that is developed to a state of dependability is a *sine qua non* in the biologic explorer. He carries no preconception to his task, to which preconception his findings must conform, but rather carries to it a mind sensitized for impression. If, possessed of an idea, his observation proves to be wrong, he surrenders it without a qualm. He dares not build into the growing structure of scientific truth a single stone of falsehood. This devotion to truth wears the dignity of worship. The research attitude also connotes a respect for those who have preceded in similar endeavors. The man who would explain a given phenomenon begins by asking if another has preceded him. He searches the literature that he may give credit to whom credit belongs. To omit this precaution brands the worker with superficiality. To repeat needlessly is a waste of time. Where such indifference is seen the indication is that the worker is ignorant of his field, is inappreciative of the importance of research and brings reproach on himself and his fellows.

Research, then, is the process of discovery—the discovery of causes and processes of natural phenomena, and the qualities of natural products, single and in combination. Moreover, what research discloses it puts at the service of humanity. To such an undertaking, it behooves a man to bring a profound appreciation of his task and of the work of those who have preceded him, as well as the best preparation possible to make himself competent and deserving of the company he essays to keep.

A MESSAGE TO OUR MEMBERS

The Editor has suggested that it might be appropriate for the President to send a message to the members of the American Dental Association at this time. The advent of each *New Year* brings with it an epoch in the lives of all progressive men. It hangs the rainbow of promise in the heavens of the future, and points the way to bigger and better things. Pity the man who has no vision looming large on the horizon of the coming twelve-months as the New Year chimes "ring out the old—ring in the new."

In our own organization, the future holds great promise—and some problems. In all conservatism, a calm study of the situation indicates that the promise outweighs the problems. In every large and scattered organization such as the American Dental Association, problems are

certain to arise, but by a wise policy of constructive deliberation, there is no problem so great or complicated that it cannot be solved equitably and satisfactorily. We extend an invitation to every member, however remote or retiring he may be, to make suggestions to the officers tending to the betterment of the organization. The officers stand pledged to consider carefully all suggestions, and while it would be manifestly impracticable to promise that every suggestion—or in fact any suggestion—will be found possible of acceptance, the spirit of helpfulness in which it is made will be keenly appreciated, and all of its constructive aspects will receive due deliberation. This is an organization not of the few but of the many. It is democratic in its tendencies, and it aims to function for the rank and file as well as for the so-called elect. The officers would like to feel that every member will take enough interest in its welfare to study carefully its needs, and to aid in its administration.

To this end, it will be the aim, during the coming year, to connect, in closer cooperation, the various state dental societies with the parent body. We would wish them to feel more concretely their integral relationship one to the other, and in this connection we urge on every state society the desirability of the utmost care in its selection of delegates to the national body. In the past, this matter has not always received the attention that its importance merits. Men should be chosen for this high function who are possessed of executive and administrative judgment, and they should be impressed at the time of their appointment with the significance of their office. To them, it is given to legislate for the welfare of the entire organization, and to direct its policies along advanced and constructive lines. The House of Delegates is the real legislative body of the Association, and its acts, therefore, are of the utmost moment, touching the welfare of the profession.

The Board of Trustees administers the policies formulated by the House, and is charged with conducting the business affairs of the organization. The Board, therefore, has a more responsible function than is usually attributed to it by the members generally; and it would seem fitting at this time to call particular attention to the service rendered the Association by the Trustees in the past. For the most part, they have received little commendation and much criticism—usually by men who are unfamiliar with the work they are called on to do, or with the difficulties under which this work must be accomplished. Between the sittings of the House of Delegates, the various intricate problems that are the inevitable concomitant of a large and complex organization such as the American Dental Association must constantly be presented for the Trustees to solve, and it requires rare judgment and clear thinking to

meet the emergencies which thus arise. The membership has fallen into the habit of accepting the services of the Trustees as a mere matter of fact, little realizing the personal sacrifice that each Trustee is making. The honor that goes with such a position is small recompense compared with the time and energy expended; to say nothing of the unreasonable criticism that is sometimes meted out to them. If the average member could attend a sitting of the Board, and listen hour after hour to the deliberations of this body in an earnest effort to administer the affairs of the Association to the best advantage, there would be a different feeling abroad toward the Trustees, and a more sympathetic interest in their labors. The organization owes much to the unselfish devotion of these men in the past, and it has for the most part been extremely fortunate in the personnel that has made up the Board.

Our members should make a more careful study of the executive and legislative machinery of the Association, to the end that they may enter intelligently into its policies, and be able to assist more concretely in its administration. With our whole organization working together as a unit in a hearty, helpful way, there is no limit to the good that can be accomplished in the coming year, and the invitation is hereby extended to our members far and near to enter wholeheartedly into the preparation of the program for 1925, to the end that we may register real progress when the meeting is over.

Personally, and on behalf of our entire official family, the wish is fervently expressed that every one of our 34,000 members may have a useful, a prosperous and a happy New Year.

C. N. JOHNSON, *President.*

DEPARTMENT OF DENTAL HEALTH EDUCATION

DENTAL ASPECTS OF HEALTH EDUCATION IN THE PUBLIC SCHOOLS

By GEORGIE B. COLLINS,* Malden, Massachusetts

"I WOULD make *health* catching instead of *disease!*" said Mark Twain. Here, indeed, is the spirit of the health education movement in the public schools today—"to *make health catching!*" In this school program for general health, dental hygiene has an important place.

Nowhere are boys and girls so susceptible to health as in the modern classroom. The personality of the teacher is a powerful influence, probably more powerful during early childhood than any other influence outside the home. A prominent leader in health education tells of the struggle to train his child in the habit of brushing the teeth regularly. He felt that his efforts were far from successful when the child began to go to school. Then one day the lad came home and demanded his toothbrush, saying, "Why, my teacher says that I must brush my teeth every day!" Exactly as though the idea were quite original and new!

Added to the force of the teacher's personality is the mass psychology of the child's own social group—the class. A desire for the approval of his own group is nearly always present in the child. Even the naughty boy, who departs from the path of regular behavior, often does so in an effort to become distinguished before the other boys. This power of public opinion in the classroom is a big factor in spreading habits of health and cleanliness.

One fifth grade class in Malden presented a difficult problem in cleanliness last year. The children were old enough to take pride in cleanliness; they knew enough to keep clean; they had sufficient facilities for cleanliness, yet they were probably the dirtiest class in the building. Finally, through a system of daily inspections and an honor roll carried on by the children, it became fashionable for boys and girls to come to school clean. The chronic offenders had no peace, and the appearance of the room improved constantly from week to week. The class has now been promoted, and holds a worthy position as one of the cleanest groups in the building. In the same class, a campaign was carried on against the biting of fingernails. One of the largest girls in the class seemed unable to overcome the habit. At last, she began to show some improvement, which was quickly explained by one of the littlest girls, who boldly and cheerfully announced, "I'm taking care of Helen!"

Another factor in making health education effective in the public schools is the opportunity for progressive instruction and persistent follow-up. The teacher, the nurse and the special health

*Special Health Teacher in Malden (Mass.) Public Schools.

worker form a team that it is hard to escape. If Tommie hasn't a toothbrush, *why* hasn't he? And if he has one, *why* doesn't he use it? Sooner or later, Tommie is caught.

Under the influence of these various factors, what are the schools trying definitely to accomplish in dental hygiene? We are trying, first of all, to make beautiful teeth so popular that every child will become interested in saving his teeth and keeping them in good condition. We want to develop the right attitude in all children as to the importance of regular dental inspections by the family dentist. We are trying to bring dental hygiene within the reach of every child; i.e., to help children secure brushes and powder or paste, and to make available to them the necessary dental service. We aim also to follow up the dental work year after year through the grades until good habits are well established. We organize our teaching so that we may supply such information as will enable boys and girls to become better citizens and better parents in the years ahead.

In all our dental hygiene work, we aim to stress the positive rather than the negative side. Little is said (especially in the lower grades) about toothache, decayed teeth, dirty teeth or false teeth. Much is said about white teeth, straight teeth, teeth strong enough to last a whole life long. Around this ideal of a beautiful mouth, we build our program in dental hygiene.

With little children, in the first few years of school, only a small amount of real information is given. The chief factor in securing good habits in these grades is the desire to gain approval or to win in competition. Some children who are indifferent to the disapproval of their teacher, nurse and classmates will work hard to attain a place on an honor roll, to earn stars on the blackboard, or to win a gaily illustrated book to carry home.

In a third grade class in Malden, it seemed that moral suasion had tried its utmost, and still nearly half the children came to school dirty. Finally, an honor roll for clean children was established. These pupils were allowed to bring pictures and make little scrapbooks on care of teeth and hair, bathing, etc. No child could make a book about personal cleanliness until he earned the right to do so by demonstrating that he *could* and *would* achieve personal cleanliness for himself. The improvement in the appearance of the class was marked and immediate.

Competition takes many forms. One class competes against another, one row against another, the boys against the girls, or each child against his previous record. Rewards are offered sometimes, but they are usually of no intrinsic value—they merely show that somebody wins.

Competition in health should be like the caucus race described in "Alice in Wonderland." "When do we start?" the animals asked. "Whenever you like," the Dodo answered. "How far do we go?" they asked again. "As far as you like," replied the Dodo. "Who wins?" they questioned. "O, we *all win!*" said the Dodo.

The best kind of competition is that in which every child has a chance to win. It is probably better to have an honor roll for recording the name of each child who keeps his teeth clean and has his dentistry done, than to give stars to those rows of children in which the teeth are properly cared for. Under the latter plan, many children whose teeth are kept in perfect condition are never allowed to score a winning because some other child in the row is neglectful.

In the upper grades, the same incentives enter in—love of approval, and desire to win in competition—but here they are not so outstanding perhaps, and are closely allied with ideals which have a strong appeal at this time. Boys and girls of this age are quick to understand that health and an attractive personal

appearance are important factors for future success and happiness. Every girl wants to be beautiful, and she quickly recognizes the importance of clean, strong teeth. Every boy wants a body of vigorous athletic type when he reaches manhood. He doesn't always see the relation of teeth to that ideal, but he is usually willing to be shown.

At this age, we try to have our boys and girls accept a personal responsibility not only for the care of their own teeth, but also for that of the teeth of their smaller brothers and sisters as well. In Malden, where special attention has been paid to health teaching for the past three years, we now find that many of our children, on entering first grade, know how to brush their teeth, although they come from homes where brushing teeth has not been an established habit. On being questioned, one child said, "Why, Mary taught me how. She bought me a brush at the Five-and-Ten, and she makes me brush my teeth every time she brushes hers." So our teaching spreads through "the great American family."

This carrying over of good habits into the home and into adult life cannot be achieved in a moment. Interest once aroused must be sustained. It must be supplemented by intelligent information, which convinces the pupil that beautiful, strong teeth are highly desirable for health and happiness, and that necessary sacrifices must be made to secure their proper care. Much information is given through regular teaching and through class discussion. Various projects are used to a large extent to carry information and to sustain interest. Among the simplest and most popular are scrapbooks and posters.

In the upper grades, well constructed posters are often made under the joint direction of the health worker and the art department. Such a slogan as "Milk helps build strong teeth," on a poster that presents a well-drawn picture of a rosy-cheeked child smiling over a glass of milk, carries a vital message to the other children, and provides purposeful activity for the boy who makes it. Posters may be very valuable in spreading interest and information even when they are not finished with the fine technic required by the art department. One boy merely mounted a colored picture of a boy running, and added the words: "Healthy boys have strong teeth! Have you?" Another used a picture of a boy whose merry smile showed a set of clean white teeth, and wrote beneath, "No toothache for me! I go to the dentist!"

Then there is the scrapbook. Where is the child who doesn't love one? Care of the teeth fills a prominent place in the health scrapbook. A third grade child made a book at home entirely by herself, wholly on her own initiative. Out of about twenty pages, she had five devoted to the subject of teeth. All the pictures came from familiar advertisements, and were used by the child to show that "you must brush your teeth night and morning," "you must go to the dentist two times a year," "you must drink milk for strong teeth," "you mustn't eat candy" and "you must chew hard foods."

Inspections also serve as a very important project in keeping up interest in teeth. Such inspections are not in the nature of diagnoses. They are made by the teacher or appointed pupils merely for the purpose of seeing whether teeth are kept clean every day. In one fourth grade, the number of children who brushed their teeth regularly was nearly doubled within two weeks after the institution of daily inspections that were recorded by stars on the blackboard.

Toothbrush drills are popular. They are valuable, too, because they not only stimulate interest in the practice of brushing teeth daily, but they actually demonstrate how it should be done.

Stories, dramatizations and songs are also used to teach facts and keep up interest. Some schools are able to add lantern slides and moving pictures,

which delight the children and bring a fresh stimulus.

Health is correlated with many subjects in the school curriculum. In the upper grades, health subjects make a good basis for oral composition. Four-minute speakers are glad to harangue pupils in the lower grades on any subject from care of teeth to care of the school yard. Their arguments carry great weight with the smaller children, and equally important is the reaction on the older pupils themselves.

Written compositions draw their topics occasionally from health subjects. Even in the lower grades, where the work is quite simple, a great diversity of ideas is expressed. One child writes, "You should always have a toothbrush of your own, and never use one belonging to someone else." Is it not difficult for us, as educators, to realize that this truth requires consideration? Frequently there appears advice as to what may be done in the absence of paste or powder. One child says, "If you haven't any paste, you must brush all the harder." Another says, "If you haven't paste, use salt." Still another advises soap, "if it is not too strong."

Children enjoy rhymes about health that have been written by others, and they especially like to make such rhymes themselves. When teachers are interested and permit children to work on a cooperative plan, the results are often surprisingly good.

Such projects as these not only enlist the interest of the children but serve also the purpose of carrying home a good amount of information to parents. In some lower grades in Malden, we have sent home hectographed papers, setting forth the importance of watching the first permanent molars. We used a copy of the smiling boy from Ferguson's "Child's Book of the Teeth," indicating where these molars appear. Under the picture was a message to parents calling attention to these teeth, and urging proper care. The child colored the picture with crayons, traced over the hectographed writing, and carried the paper home as a little project of his own. The interest of the parent is much more keen in such a message as this than it would be in the same message carried by a printed pamphlet.

The relation of the dentist to school health work is appreciated in most schools today. Frequently, the teacher knows who the child's dentist is, how many fillings the child had at his last visit, when he is going again and what the dentist said. Sometimes, the children ask for certificates of completed dental treatment so that they may prove their eligibility for an honor roll, or awards of some sort. Such a teacher recognizes the dentist as one of that great body of people who are contributing to better health in the growing generation. The dentist is a much-talked-of-person in the classroom, and his position is that of a very important friend.

This paper cannot deal in detail with the work of the school nurse or dental hygienist in relation to the dental hygiene program in schools. Work in the classroom, however, could accomplish little without the supporting work of the nurse. Through careful inspection of each child's mouth, she probably knows its exact condition better than anyone else in the school system. (In some school systems these inspections are now made by dentists or dental hygienists. In Malden they are still made by the nurse.) She also makes the contact with the home, and impresses on the mother the need for daily dental care at home and for regular visits to the dentist. She makes appointments at clinics, takes groups of children to clinics for treatment and follows up the corrections to a large extent even in cases in which the children go to the family dentist. On her falls the responsibility for securing corrections of dental defects, but she is equally anxious to develop the preventive side of the program, teaching

children to brush their teeth daily, to eat the right kinds of foods, to go regularly to their dentists for care and in every way possible to safeguard the beauty and soundness of their teeth. She frequently handles the sale of brushes to school children, if that seems desirable.

In the last analysis, the classroom teacher is the one best situated to develop good dental habits in children. She is on the job all day with only a small group of children. She knows them individually as no other worker can, and has closer and more frequent contact with them. It is she who has the opportunity to furnish that repetition and follow-up, day after day, that is necessary to the development of well established habits.

How long does it take to really establish habits? Who knows! One expert, when asked how long it takes to train boys to brush their teeth regularly, replied, "If you have good luck, you may do it in about seventeen years." We are aiming to do better than that. Surely, with the combined efforts of parents, teachers, nurses, dental hygienists and dentists, we may hope in the coming generation to approach more nearly our ideal of beautiful sound teeth for all our children.

RESPONSIBILITY OF THE DENTIST IN ESTABLISHING COMMUNITY DENTAL SERVICE

By C. CARROLL SMITH, D.D.S., Peoria, Illinois

(Read before the Illinois State Dental Society, Springfield, Illinois, May 13-15, 1924)

THE time is past when it seems necessary to present to a group of intelligent dentists a form of argument to convince them that the community needs service along the lines offered by our profession. Every dentist whose motive is honest, whose purpose is sincere, whose endeavor is along lines of progress, whose heart is in his work, and who in practicing his profession has in mind the good he can bring to his fellow-men, knows that the public needs educating concerning the importance of a clean mouth and the value of a perfect set of teeth.

Every child and every adult has a right to a clean, wholesome mouth and to a comfortable, useful, and well kept set of teeth. You notice we say every *child* and adult, for dental information can better be disseminated through the child and be more sure of accomplishing results, than through multiple efforts with the adult, whose prejudices are biased and whose habits are fixed. The child is a bundle of receptivity and is best fitted to take on new views, see right values, respond to progress through better information, and fix new habits that will insure a better race.

It is not enough to know that we live in a wonderful age, ripe for a healthful, happy, useful state of being. It is ours to recognize the advantages at hand, respond to the opportunities knocking at our door, and do our part to help the world to know their privilege, that they may appropriate measures now at their command to make the doorway to the body a fit and safe vestibule to guard, receive, prepare, and pass on the food needed to help make a normal physique.

Community dental education is not a luxury but a necessity—a prerequisite to good citizenship. Two questions clamor to be heard and insist upon in-

telligent replies. First, the community asks, "What may we rightfully expect of you, the dental profession, in the way of information, to bring us in touch with the benefits that you hold in store to help produce a better citizenship?" Second, the dental profession asks, "What can we do to instruct you, the community, that you may recognize and take advantage of the methods at hand, through dentistry, to help you to a more respected and more useful citizenship?"

That our communities are dentally ignorant, and are consequently suffering is not to be wondered at when we stop to consider that Illinois has no organized program whereby this ignorance may be lifted and the light of tooth common-sense be made to dissolve the shadows of unenlightened intelligence where an enlightened intelligence should be.

Now to the point: What are we, the dental profession of Illinois, giving to the communities of our state to enhance the citizenship of our country? We have a responsibility. It is not a new responsibility. It has always been our responsibility. Why have we been neglecting and shirking it? Have we any excuse? Yes. Is it because we are lacking in backbone? No. As a dental profession we have a strong backbone, for we believe in our line of endeavor for the good of mankind. We know that we have a legitimate way of doing good, and we are proud of the possibilities of our profession. Then what is our excuse? Oh, we have not known how to go about it—this matter of dental education for the community. We have not had the vision, or if we have had it, it has been hazy and indistinct. If some measure of vision has come to us, we have not analyzed it sufficiently. We have not come together as a profession and definitely diagnosed the community situation, systematically planned to relieve it, organized to solve its problems and take care of its needs. Dreams have haunted us for years, but have given us nothing tangible on which to act in a state-wide program of community endeavor along the line of dental education. We have been looking for light, but each day dream led us to confusion, indecision, forebodings of impossibility, and discouragement.

Is there no way then? Must the community go unserved? There is a way and the community can be served. When? When we will! "Where there's a will there's a way," is a maxim not too old for the dental profession of Illinois to apply to its community problem. We have big men with big hearts in our Illinois dental personnel. They have accomplished big things in dentistry. They have solved big problems, and they are still solving big problems. They are big enough to solve the community problem, and they will solve it.

It was my privilege to speak at a session of the Household Science Department of the Illinois Farmers' Institute, held at Dixon, in February. It was a splendid audience made up of some of the best intelligence gracing the rural communities of Illinois and representative of their motherhood and home life. Domestic Science indeed—the science of right living. We were impressed with the honesty of purpose that confronted us, a sincere search for what was good for their communities. The glad way in which they received our feeble effort to give them something along the line of tooth intelligence was so genuine with appreciation, that the experience gave a touch of possibility to many of our dreams of the last few years. A rift came in the cloud, and we saw a silver lining. Possibility has been singing a song in our ears ever since, and we bring this ray of hope to your attention, that dental education for the community may seem practical and at hand.

We believe that the Household Science Department of the Illinois Farmers' Institute and the Illinois State Den-

tal Society can unite in endeavoring to bring about an organized effort in dental education that will serve the communities of the State of Illinois. The Household Science Department of the Illinois Farmers' Institute has a capable and enthusiastic secretary. Our Illinois State Dental Society has enthusiastic and capable officers. The officers of these two organizations could unite to form an advisory committee to devise ways and means to put a capable dentist in the field as a state worker, and with him formulate a plan of activity that would reach to every community of the state.

This plan would include the presence of the state worker at county farmers' institutes throughout the state, planning to reach the rural communities with a definite educational program. Clean mouth talks to the pupils of the rural schools, an examination of their mouths, notices sent home to the parents with printed matter regarding the care of the teeth, stressing the importance of the first permanent molar and a proper toothbrush technic are all points to be considered. The plan would include leaving some ways and means with the teachers to help instil clean mouth habits and keep before the pupils the importance of being in touch with their dentist. In the evening a community lecture would be given, which would be entertaining and devoid of technical dental terms. The blackboard, charts, or lantern slides could be used, with music and other features to command the interest of the community.

The entire educational trend of this plan would be to remove prejudice, ignorance, and fear and to bring pupils and parents in touch with dental service. We do not believe this effort should be compulsory in the state, but should be promoted good-naturedly, tactfully, and efficiently, so as to leave with each community a wholesome appreciation of dental opportunity.

This same plan could be adapted to reach the small town communities, the state worker spending a week, or as many days as would be necessary according to the size of the community and school system. Educational talks would be given in the schools, adapting the subject matter to meet the intelligence of the child, according to grade. Examination of pupils' mouths would be included, along with notices sent home to parents. The local dentists would be interviewed, women's clubs, parent-teacher associations, and other civic bodies would be asked for a hearing, and some plan left in the schools for simple instruction concerning the mouth and teeth.

Then there are the smaller cities of the state with a system including several school buildings and a community high school. The plan could be happily adapted to such communities as these and efforts made to secure cooperation of local dentists.

There are also the larger cities, with an extensive school system, that need a boost in the right direction, which a capable state worker could give. Dental clinics would be encouraged and operative service planned for the needy.

The only way to further this community dental service is through the public school system, working pleasantly to break down prejudice and disseminate information. It is the child of school age in whom lies the hope of this community educational opportunity, and the members of the dental profession will find their greatest sphere of usefulness when they make the child and preventive dental measures their basis of endeavor. Each public school stands for a definite community spirit and need, and a dentist who conscientiously plans a program for one community can adapt it to any community, large or small, city, town or rural. The subject matter may be the same in each community, but adaptation is the secret of success.

Some undertaking is it not — this

dream of ours? A real job and a worthy one for the right man. A great opportunity to do a great amount of good. It is a possibility. It is a necessity. The need is unquestioned. The communities of our great state have a right to this service. It is a responsibility of the dental profession and of the community. The community and the dental profession should cooperate.

Discussion

E. W. Swanson, Chicago, Ill.: Dr. Smith has presented a most interesting paper on a very vital subject, and one in which he has had a great deal of experience and success. The work he is doing in the schools of Peoria is, in my mind, real community dentistry. Too many men think of clinics as dispensaries only, when community dentistry is mentioned. Although I am a firm believer in dental clinics when they are properly managed and the work they do is supervised, something more is needed.

These dental clinics and dispensaries cannot take care of the children of the community, and they never will. They can only care for the mouths of a limited number, and as each mouth is placed in a healthy condition, another takes its place. In the meantime, caries and disease are running rampant in the mouths of thousands of others, who are unable to get this service because of inadequate teaching in the schools, and the lack of space and equipment where we find clinics. Thus before they will have rendered this service to all the children, those that were treated first need care again. This is much like treating some disease without removing the cause. In this case the cause is ignorance of the community, and negligence on the part of the profession. Reparative service is necessary and it justifies itself, but it keeps going in a circle, and does not do so much good as a more comprehensive preventive program—namely, education in oral hygiene in our schools with systemized reparative work. Even our root canal men, with all their various methods of therapy and discussion, agree that preference should be given to greater care of uninfected pulps. Reparative dentistry is good, in fact anything that is done for the health of the child is good as a start, but that plan of work is not for Illinois, or any community in Illinois. The time has come when we should have a definite system of teaching oral hygiene and dental education to the child.

This can best be done in the schools, in conjunction with the child's daily studies. The giving of classroom talks, toothbrush drills, literature to the child and parents, mouth examinations and notice to parents of the condition of the child's mouth, are all very important. This applies to the rural schools as well as those in the cities and towns.

I wish to make an addition to Dr. Smith's suggestion. He mentions a state organizer, whose duty it will be to go around throughout the state giving these talks, in conjunction with the county farmer's institutes. Personally, I do not believe any one individual can do any such thing to the best advantage, except possibly in the rural communities. This work properly planned and carried out in any of our medium sized cities would necessitate more than one individual, to say nothing of the larger cities. He can do this, however, if he has some efficient assistance, and there is only one who can give it, and that is the dental hygienist. This has been proved by the work of Dr. Fones in Bridgeport, Connecticut, where he has established the teaching of oral hygiene and diet with the regular classroom work in the schools. He has a staff of twenty-four hygienists, one supervisor and two assistants, and three full time dentists. The hygienists give the classroom instruction to all the children in the schools, which includes a comprehensive study of foods and their value to the body. The dentists care for the reparative work in the mouth, paying particular attention to the first permanent molar.

Oral hygiene and preventive dentistry should be taught to the children in the grade schools. The dental hygienist is trained in this work and teaches it to the child more impressively than most dentists, and usually there are not sufficient funds to employ dentists for this work. The school teachers are not well versed in oral hygiene, and their time is pretty well consumed in teaching the child his regular classroom work.

The dental hygienist should be under the jurisdiction of the board of education and all her work should be done in the schools. She should give a definite outlined course in oral hygiene and diet, together with toothbrush drills and mouth examinations and the administration of prophylaxis. The reparative work should be referred to the child's dentist or to the clinic or dispensary, if the family is unable to pay for the necessary work. Dental hygienists are as necessary to community dentistry, as the nurses are to the health department.

In Chicago we have five hygienists working in the schools, giving classroom talks, toothbrush drills, and making mouth exam-

inations. Next year, the board of education is to increase this number, and five hygienists are to be employed in the parochial schools.

Whatever other community service is to be rendered, if it be in the form of clinics, or some educational plan to be taught in the schools, should be under the control of a special committee, appointed by the local or state dental society. You will find no better apostle for community dentistry and oral hygiene, than a converted child. Once the child is taught the necessity, and the proper manner of caring for the teeth, you may rest assured he will soon convert the entire family, and it is then up to you men to take care of them.

E. E. Graham, Lake Forest, Ill.: Dr. Smith's message has brought to us something for consideration. He has given us a plan for a state wide campaign by which every community shall be aroused to a wholesome appreciation of dental opportunities. He then tells us that after one or two weeks of a health campaign in a community some plan should be left in the schools for simple instruction concerning the mouth and teeth. It is on this phase of a state wide health program that I should like to talk for a few minutes.

I think the idea of going into the various communities and arousing the enthusiasm and interest of the people there by educating them to the needs of a definite health program is very fine, but unless some definite plan is left for "carrying on," the interest and enthusiasm will soon die out and the real purpose may be lost. As Dr. Smith has said the public school is the most logical place in which to realize this definite plan.

It is a matter of education and not of a dental clinic in the schools that should be emphasized. In larger cities and where funds are available the clinic is a distinct asset.

I would include in the regular curriculum of the school child a health department under the supervision of a specialized teacher, this department to be considered as important as any other special subject, such as art, music, domestic science, etc. Each child should be required to pass regular physical examinations before being promoted.

The special teacher should be either a dentist who understands and can teach children, or a teacher who has made a special study of this subject.

Every child in the schools should be examined at the beginning and close of each school year, the findings of these examinations to be recorded on permanent record cards which have spaces to cover the number of years the child is to be in the grades. A tabulation of these records will show the accomplishments and become very valuable as the years go by. A copy of the conditions found should be sent to the parents and also instruction as to what should be done. With this instruction, blanks should be furnished to be signed by the parent promising to have the necessary work done. Upon receipt of the note promising to have the work attended to, another blank should be sent to be signed by the dentist at the time the work is completed. If sufficient reason is given why this work cannot be done, then some other means will have to be provided to take care of the child. The record cards are in themselves educational, for the children will strive to have fewer defective teeth and will brush their teeth more regularly to produce pink, healthy gums and clean white teeth.

The teacher should devote at least twenty minutes a week in the individual classrooms. In the kindergarten and lower grades this work can best be put over by the use of charts, pictures, stories, games and dramatizations. In the upper grades a graded text book should be used and the children taught important facts about the mouth and teeth. Here we must be careful to avoid technical terms, for these children are not being taught to be dentists: we are striving to teach them the use and hygiene of the mouth and teeth, and to show them how essential good care and prevention of disease are to their future health and happiness.

Enthusiasm can be kept alive among the children by having competitive contests between the grades of one school building, between schools or even between neighboring communities. The winners should be given some honor such as a prize pennant or cup which they may keep until they are excelled by some other group. Interested teachers can use this subject for language lessons, spelling and supplementary reading. The art teacher may use the subject for art posters and the like. The music teacher may teach effective little songs that have recently appeared. Health films, now that the motion picture lanterns are available in most schools will be of interest to teachers and pupils. All these things can be used in public exhibits and parent-teacher programs. Honor rolls showing the names of those having 100 per cent clean mouths should be kept in every room.

Such a plan can be worked out in far more detail and the principles used be much the same throughout the state, but in each case it would have to be adapted to suit the size, wealth, general conditions and needs of the particular community.

RADIO TALK*

By C. N. JOHNSON, D.D.S., Chicago, Illinois

LADIES and Gentlemen: I bring a message tonight from the great American Dental Association, numbering more than 34,000 members. It is very appropriate that the American people should hear from this Association, because of the important relation that the dental profession sustains to the health and physical well-being of the human family. When it is remembered that tooth decay is the most prevalent of all human diseases, that at least between 80 and 90 per cent of the children in all civilized communities are attacked by this disease, it must be apparent that it becomes a matter of prime importance to every father and mother in the land, to say nothing of its vital relationship to the children themselves.

The significance of sound teeth and healthy mouths in the maintenance of good health is becoming daily more apparent, and the dental profession is not living up to its fullest function as a profession unless it spreads the gospel of dental hygiene till it is carried to every hamlet and home in America. There is nothing greater in the entire field of health betterment than to maintain normal mouth conditions.

The problem presented to the dentist of today is the age-old problem that has always confronted the profession of medicine when any particular disease has gained the ascendancy, and that is the problem of prevention. Not till the prevention of dental disease has become an established fact shall the dentist be able to hold up his head as a real benefactor to his race; and, in view of the facts in the case, this is a somewhat harsh judgment to place on the profession, because, after all, in the ultimate analysis of the situation, the dentist is not actually the one to achieve prevention. There is only one medium through which prevention of dental decay will ever be brought about, and that is through the efforts of the people themselves. The daily care of the teeth by the individual is a more important means to this end than the occasional care by the dentist. This occasional care happens to be very important: indeed, without it, most mouths that are at all susceptible to dental disease would go straightway to ruin. If cavities occur in the teeth, the patient manifestly cannot fill them himself, and if hard deposits form on the teeth they cannot be removed by the simple expedient of the toothbrush. The dentist must therefore come to the assistance of the people in any program of prevention, but the real factor of greatest significance in any such program is the attention given the teeth and mouth by the individual. What this particular care should be is a matter for the dentist to impart to the patient, and in every dental office in the land this information is available for the asking.

One of the chief functions, therefore, of the proper practice of dentistry is an educational one. We owe it to the people of this country that the best available information leading to the prevention of dental disease shall be freely given through every conceivable source within our power, and to this end it is significant that this, the greatest dental organization in the world today, is devoting much of its energy to discovering the best medium through which the

*Broadcast from Station WFAA, Dallas *News and Journal*, November 11, 1924, under the auspices of the American Dental Association.

people may ultimately be relieved from this most prevalent scourge of humanity. And the people may rest assured of the fact that, just as rapidly as we learn something significant and of value to them in the way of health conservation, information will be passed freely on to them by all the sources at our command. These sources will be the public print, through the medium of health articles, lectures before teachers, nurses, mothers, and civic organizations, and, most intimate and most effective of all, concrete instruction given the patient in every private dental office in the land that is conducted by a member of the American Dental Association.

The fact should be driven home to the consciousness of the people that this organization, with its myriad details, is not being conducted primarily for the benefit of the dental profession. If this were the case, it would not be worthy of the respect of all good citizens: it would merely express a species of selfishness. The real object of all our endeavors is to further the welfare of the people in all those problems with which we are most intimately associated. Unless we can bring to the people of America some concrete benefit as the result of our deliberations, we shall have failed in the fruition of the real mission for which we were organized, and for which we have functioned for more than sixty years.

We therefore invite, on behalf of the earnest men and women who make up our membership from one end of the land to the other, at least a sympathetic interest in our organization on the part of the people as a whole, for whose benefit we have so long endeavored to labor.

It has been conservatively estimated that dentistry can add ten years to human life, and we believe that this is no visionary picture, but an actual fact. Granted that this be true, it can come about only by the closest and most cordial cooperation between the people and the dental profession. We, on our part, are willing to devote our best energies to bring this about. We stand pledged in our professional faith never to rest nor relax till such time as this "hell o' all diseases" is wiped from the consciousness of human kind. The question is, will the great American public respond by giving us the privilege of accomplishing this signal service for their benefit?

In extending a greeting from our 34,000 members, I express the hope that every one of our dear friends of the radio world may sleep peacefully tonight undisturbed by the pangs of an aching tooth.

REPRINTS AND POSTERS

"The Bad Baby Molar"—a one act play by Lon W. Morrey, D.D.S., Lake Forest, Ill., may be purchased from the Department. Price 10c.

"Food Posters." Several inquiries have been received concerning the set of six food posters two of which were shown in the October issue of *The Journal* and later displayed at the Dallas Session. The photographs, which are 13¾ by 15½ inches, may be purchased for $2.00 each. These can be mounted on heavy tan cardboard, colored, and the captions printed below or made with gummed letters. The captions are as follows:

1. Foods providing fat-soluble A vitamin, which promotes growth, prevents rickets and xerophthalmia in young.
2. Foods providing water-soluble B vitamin, which promotes growth, prevents beriberi and antineuritic conditions.
3. Foods providing antiscrobutic C vitamin, which promotes growth, prevents scurvy.
4. Foods providing calcium, necessary for strong bones and teeth.
5. Foods providing phosphorus, necessary for activity of bone cells, help give rigidity to bones.
6. Foods providing iron, essential for pure red blood.

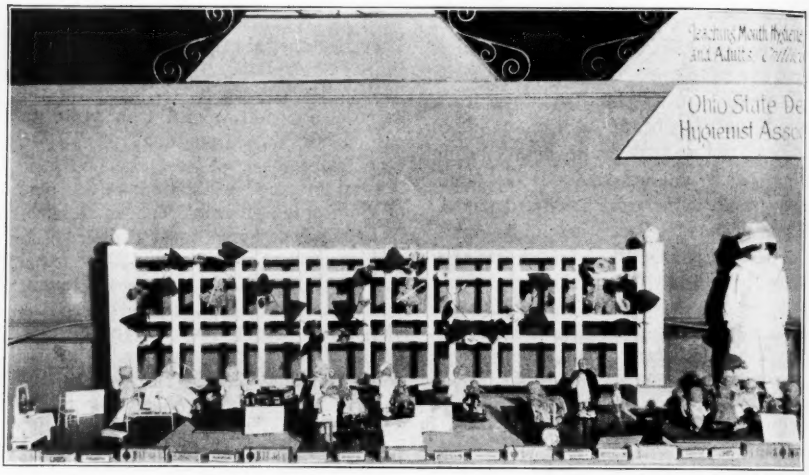


Exhibit of Ohio State Dental Hygienists' Association.

MOUTH HYGIENE EXHIBIT

The exhibit "Teaching Mouth Hygiene to Children and Adults" is a most interesting display, visualizing in miniature form the various methods employed to win the confidence and cooperation of the laity and to educate the mind of the public to the realization of the value of mouth hygiene. The dental hygienist, who is a teacher of mouth hygiene, is shown in all her fields of operation. Beginning in the hospital, the miniature ward features the hygienist doing prophylactic work on the patient in bed. The miniature dental clinics show the dentist and hygienist demonstrating preventive and educational work in the industrial clinic and private office practice. A tiny portable outfit presents the hygienist giving prophylactic treatment and giving personal instruction in the public schools. Then there is the home group with the hygienist in the Red Cross social service, calling in the home and instructing the mother in the care of the mouths of both herself and her family, and emphasizing the importance of a correct diet. The remaining section of the exhibit is devoted entirely to methods employed to arouse the interest of the child in mouth hygiene. They are displayed by a story telling group, by a toothbrush drill, by charts and posters, and pageantry, which is represented by the sunbonnet babies giving a maypole dance around a large toothbrush. Music also plays an important part in such educational work, and it is here represented by a doll band, which seemingly is playing the children's favorite song, to the tune of Yankee-Doodle, "Grinder Men are marching on, well armed with paste and powder" with the Grinder Men, the upper and lower arches, following the band, smiling as they carry their burden of paste and powder "To keep the realm of Toothland clean, and sound the warning louder."

This exhibit presented at the Dallas meeting on behalf of the Ohio State Dental Hygienists' Association is the work of Miss Mildred M. Gilsdorf of Chillicothe, Ohio. It may be secured from Miss Gilsdorf for dental and public health meetings and health demonstrations at a rental of $3.00 per day or $15.00 per week. Further information will be given on request.

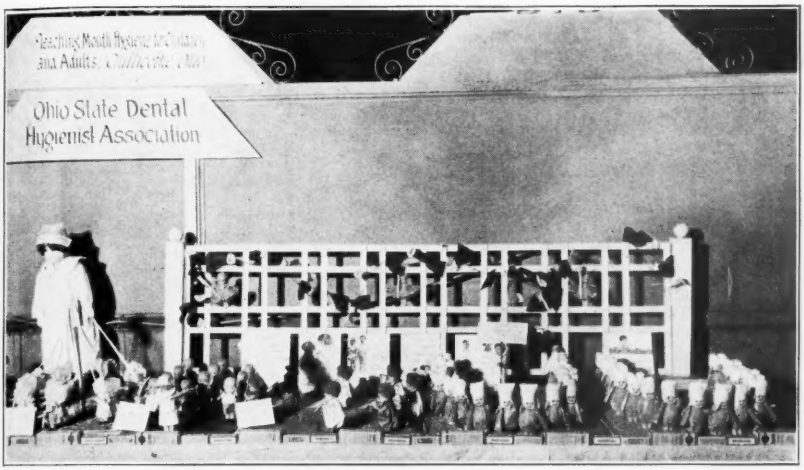


Exhibit of Ohio State Dental Hygienists' Association.

THE HIGH SCHOOL LUNCH

Many lunchrooms are making real efforts to get the students to eat what is good for them. All school lunchrooms try to have well planned menus and properly prepared food. One school writes that it allows each student to have but one dessert. In some schools deserts and candies are allowed only after the students have had other food. Hartford, Connecticut, reports that desserts are sold at a profit and some of the more substantial hot dishes at a loss, to induce the children to choose the types of food that are best for them. Candy is not sold at the high school lunch counters of twenty-five cities. One hundred and two schools allow candy, though thirty-four of them report that only carefully selected varieties are offered.—*Irene C. Harrington, in Journal of Home Economics,* November, 1924.

One unit of the Ohio State Dental Hygienists' Association Exhibit.

ADDITIONS TO LIST OF TECHNICAL FILMS

In the August issue of THE JOURNAL, a list of technical and nontechnical dental films was published. The Eastern Film Company, 220 West Forty-second Street, New York City, was named as the distributor of a number of dental cinemas. All of the films thus listed are now distributed by The Society for Cinematographic Instruction in Medicine and Surgery, 320 West End Avenue, New York City. To the list of technical dental films distributed by this service may be added:

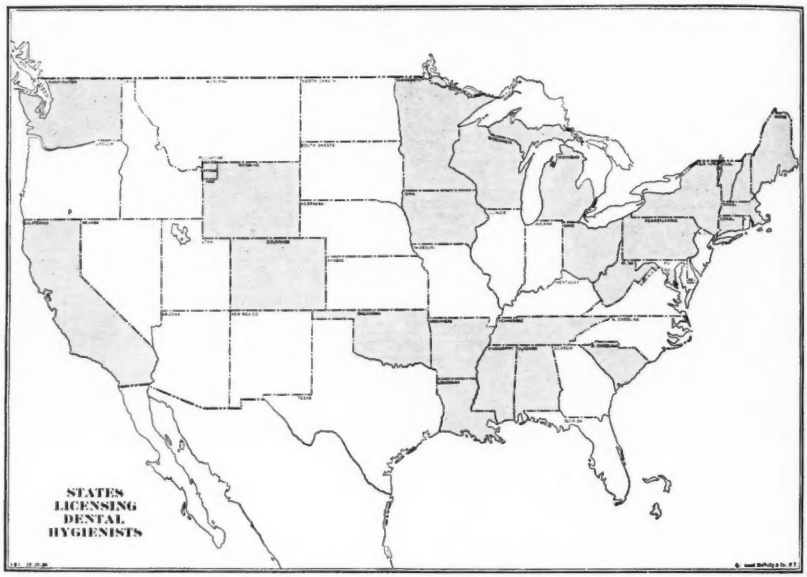
Root Resection—1 reel

Original producer—Dr. Adolph Berger

Preparing a Vital Tooth for a Porcelain Jacket Crown—2 reels

Original producer—Dr. H. S. Both

"Your Mouth"—A nontechnical one reel film, by Dr. Edwin N. Kent, is also distributed by this society.



The states (shaded) licensing dental hygienists are: Alabama, Arkansas, California, Colorado, Connecticut, District of Columbia, Louisiana, Iowa, Maine, Massachusetts, Michigan, Minnesota, Mississippi, New Hampshire, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Vermont, Washington, West Virginia, Wisconsin, Wyoming. Hawaii also licenses dental hygienists.

CALCIUM AND PHOSPHORUS CONTENT OF COMMON FOOD MATERIALS

The following tables contain data concerning the amount of calcium and phosphorus which may be obtained from a large number of food materials in common use. These data have been compiled from U. S. Department of Agriculture, Office of Experiment Station—Bulletin No. 227, by H. C. Sherman.

Food Materials	Calcium	Phosphorus
Animal Foods, Cereals, Etc.	Per Cent	Per Cent
Meats	.054	1.004
Fish and shellfish	.128	1.222
Eggs	.071	.160
Butter	.016	.014
Butterine	.016	.014
Buttermilk	.123	.095
Cheese	.886	.651
Cottage Cheese	.071	.199
Milk, condensed	.307	.238
Milk, whole	.123	.095
Cream	.105	.081
Barley, pearled	.018	.201
Corn meal	.006	.200
Hominy	.010	.309
Old process meal	.010	.309
Oatmeal	.056	.425
Rolled oats	.056	.425
Rice	.009	.086
Wheat flour	.020	.094
Crackers and macaroni	.020	.094
Ginger Snaps	.029	.109
Graham flour	.026	.290
Entire wheat flour	.026	.290
Bread	.015	.071
Chocolate	.101	.392
Molasses	.254	.058
Maple sirup	.088	.044
Honey	.004	.028
Vegetables	Per Cent	Per Cent
Asparagus	.027	.041
Beans, pea dried	.154	.479
Beans, kidney dried	.162	.539

Vegetables	Per Cent	Per Cent
Beans, lima dried	.076	.328
Beans, string, fresh	.053	.040
Beets	.014	.041
Cabbage	.041	.035
Carrots	.055	.041
Celery	.067	.044
Corn, canned or green	.032	.112
Cucumbers	.020	.023
Eggplant	.012	.034
Greens, turnip tops	.363	.043
Horseradish	.097	.055
Lettuce	.032	.032
Onions	.029	.035
Parsnips	.054	.080
Peas, dried	.098	.373
Peas, canned	.016	.062
Potatoes	.011	.063
Potatoes, sweet	.0118	.035
Pumpkins	.023	.059
Radishes	.018	.031
Rhubarb	.043	.045
Rutabagas	.074	.056
Spinach	.046	.045
Tomatoes	.014	.020
Tomatoes, canned	.014	.020
Turnips	.062	.047
Vegetable soup, canned	.019	.046
Watercress	.185	.029

Fruits	Per Cent	Per Cent
Apples	.008	.011
Apples, evaporated	.026	.053
Apricots	.015	.025
Bananas	.006	.027
Blackberries	.056	.036
Blueberries	.032	.020
Cherries	.019	.033
Cranberries	.015	.015
Currants	.035	.031
Currants, dried	.131	.078
Dates	.074	.053
Figs, dried	.200	.145
Grapes	.010	.028
Grape jelly	.006	.019
Grape fruit	.023	.019
Huckleberries	.026	.031
Oranges	.031	.021
Peaches, dried	.034	.146
Peaches	.011	.021
Pears	.013	.018
Pears, canned	.006	.009
Pineapples	.027	.010
Plums	.016	.017
Plums, jammed, canned	.010	.011
Prunes	.045	.089
Raisins	.030	.105
Raspberries	.051	.041
Strawberries	.041	.030
Watermelons	.013	.015

SLIDES SHOWING NORMAL OCCLUSION AND MALOCCLUSION

Below is a list of slides showing normal and abnormal occlusion, and other oral conditions. These may be purchased for 35c each. The complete set will be sent on approval in order that one may select the slides he wishes.

202 Plaster cast showing normal occlusion.

203 Photograph of girl showing some of the effects of improper oral and nasal conditions in childhood.

204 Plaster cast of upper jaw showing left cuspid erupted out of alinement

206 Plaster models showing typical "thumb sucking mouth"

207 Plaster models showing "open bite"

208 Sketch showing protrusion of upper teeth

209 Sketch showing restricted upper arch

210 Photograph of mouth breather

211 Photograph of boy with bimaxillary protrusion

212 Photographs of girl showing retrusion of lower jaw; before and after treatment

213 Photograph of girl showing protrusion of upper teeth

215 Sketches of anatomy of throat and head showing normal and abnormal tonsils and adenoids

216 Sketch of a normal face

217 Plaster cast showing loss of upper permanent bicuspids

218 Plaster cast showing loss of first permanent molar

219 Plaster cast showing loss of first permanent molar

220 Photograph of skull showing normal occlusion

221 Photograph of baby sucking pacifier. Caption: "Pacifiers carry disease and are likely to cause adenoids later."

Medical and Dental News

ARIZONA

Oral Diseases in the Tuberculous: Dr. Herman Brody (Oral Hygiene, December, 1924) writes from the tuberculosis sanitorium at Whipple Barracks, Prescott, Arizona, that it has been observed that dental caries, gingivitis, pyorrhea, Vincent's infection and other oral diseases are more prevalent in the tuberculous than in patients from private practice.

CALIFORNIA

Pneumonic Plague: The recent outbreak of pneumonic plague in Los Angeles is the second outbreak of this type of the disease in the United States, the first being in Oakland, Calif., in September, 1919. In all, since the first recognition of the bubonic plague in San Francisco in 1900, and including both bubonic and pneumonic forms, there have been less than 500 cases in the United States in the last twenty-five years. Besides the Pacific Coast States, the disease has appeared for brief periods in Louisiana, Texas and Florida.—Journal of the American Medical Association.

ILLINOIS

Scope of Physical Examinations: Out of 1,397 physical examinations made in an eastern department store, it was found that 405 persons were free from defects—or 29 per cent. There were 701 defects of vision; 528 disturbances in nutrition; 20 cases of defective hearing; 887 cases of defective teeth; 38 enlarged and diseased tonsils; 167 cases of goiter; 50 cases of circulatory disturbance; 10 cases of disease of the lungs; 93 cases of skin disease; 97 cases of flat foot; 90 cases of severe dysmenorrhea; 52 abnormal urinary findings; a total of 2,867 different kinds of defects in 992 examinations, averaging two per person. "Diseased teeth or disturbances of vision demand immediate attention and the patient should be so advised. Physical examinations are only the first step. Our entire efforts will be completely lost unless the follow-up system is effective.—Illinois Medical Journal, November, 1924.

Work of Cook County Children's Dental Clinic: After more than a year of existence, the Cook County Children's Dental Clinic makes a report of services rendered (Chicago Dental Society Bulletin, November 21, 1924). Children are admitted from four sources: county agent, county social service, juvenile court and county hospital. Service is limited to children under 16 years. A general physical and social examination is made along with the dental examination, after which only a prophylactic treatment is given at the first visit. Extractions are left, except in urgent cases, until all operative work has been completed. The child is given appointments at three months and six months thereafter, and a large majority of these children return. Often first molars have been so long neglected that it is impossible to save them. The value of cleanliness in the mouth is emphasized. and a record chart is kept in each case. The total number of patients examined was 2,589; prophylactic treatments, 2,527; reexamined, 1,350; fillings (permanent teeth), 5,099; fillings (deciduous teeth), 1,846; treatments (permanent teeth), 2,549; treatments (deciduous teeth), 628; extractions: permanent teeth, 1,019; deciduous, 2,338; roentgenograms taken, 965; operations, 7; surgical treatments, 20.

Chicago Pediatric Society: At the regular meeting of the Chicago Pediatric Society, May 20, 1924 (American Journal of Diseases of Children, November, 1924), Dr. Arthur D. Black spoke on "The Development of the Teeth," touching on the following topics: the first permanent molar, permanent teeth in two groups, hypoplasia or atrophy of the teeth, so-called Hutchinson tooth, mottled enamel

and the relation of early care of teeth to the general health. Dr. F. Blaine Rhobotham talked on "Treatment Indicated in Childhood," and Dr. Frederick B. Noyes on "Dental Deformities: Etiology and Treatment."

Better Care of Children's Teeth: The Public Service Committee of the Chicago Dental Society is using its utmost efforts to establish mouth hygiene instruction as a part of the teaching program in the public and parochial schools of Chicago. The board of education and the authorities of the Catholic church in charge of the parochial schools are sympathetic toward this program, and it is expected that within the next few years much progress will be made. It is up to the members of the dental profession in Chicago to do their part, which must include a greater interest in the care of the teeth of children. Complaint has been made by the city health department physicians and also by the dental hygienists employed by the board of education that children are being constantly told by the dental practitioners of Chicago that it is not necessary to fill cavities in the deciduous teeth, as they will soon be lost in the natural course of events. The result is that the pulps of deciduous teeth are exposed, abscesses formed, and the teeth in many cases extracted months or years before they should be lost. This oftentimes results in irregularities of the permanent teeth, with increased susceptibility to caries and to diseases of the soft tissues later in life.—A. D. Black, in Chicago Dental Society Bulletin, November 21, 1924.

INDIANA

James Whitcomb Riley Memorial Hospital: This hospital, which is almost ready to receive patients, is one of two hospitals caring for children exclusively. It is the only one of the two having a dental department.

MASSACHUSETTS

New Medical and Dental Building: The new Medical and Dental Building at 397 Commonwealth Avenue, Boston, has just been completed at a cost of $250,000.

MINNESOTA

Minnesota University Clinic for Children: A mental hygiene service for children has been established by the University Hospital (Minneapolis). This service includes the organization of clinics at the university and at Duluth, of traveling clinics to visit cities elsewhere in the State, and of a special consultation service. The clinics will deal with children having mental defects. personality peculiarities, bad habits, and any behavior problems. (News Letter No. 17, Minnesota State Board of Health, Division of Child Hygiene, Minneapolis, September, 1924.)

NEW YORK

Examination of School Children in New York City: As a part of the annual health day program, nearly 1,000,000 school children in the city schools were examined November 6. Every teacher in the city suspended academic work on that day until they had examined all their pupils for apparent physical defects. They referred all cases presumed to require medical attention to medical inspectors of the department of health to complete the examination, after which regular follow-up work will begin. In the meantime, parents are to be informed by school principals of defects found, and advised to have them corrected. The health program in the city schools is under the supervision of the Bureau of Educational Hygiene of the Department of Education, of which Dr. Albert K. Aldinger is director.—Journal of the American Medical Association, November 22, 1924.

American Stomatological Association: At a meeting of the American Stomatological Association, New York, the following principles were adopted: 1. Stomatology signifies that branch of medical science which has for its purpose the study and treatment of diseases of the mouth. 2. Stomatology deals with all problems concerning the normal and abnormal conditions of the mouth and its adnexa, and with the surgical and medicinal treatment of oral disease. 3. Stomatology, so defined, is the only correct designation of the specialty of medicine devoted to the care of the mouth and teeth, including dental prosthesis. 4. Stomatology embraces odontology (dentistry), or the study of the normal and pathological conditions of the dental apparatus, which is an integral part of the oral cavity. Odontology or dentistry is inseparable from stomatology.

Dr. Homer E. Smith, New York, was elected president; Drs. Oliver T. Osborne, New Haven, Conn., and Noah Philip Norman, New York, vice-presidents; Dr. Robert H. Rose, New York, treasurer, and Alfred Asgis, D.D.S., New York, secretary.—Journal of the American Medical Association, November 22, 1924.

Dental Clinic for Working Children, Brooklyn: A free dental clinic for the benefit of boys and girls between 14 and 16 years of age who, because of dental defects, are unable to obtain employment certificates, has been opened in Brooklyn under the direction of the American Frugality Association, with the assistance of the health department and the King's County Dental Society.—The Journal of the American Medical Association, July 23, 1924.

PENNSYLVANIA

Dentists Admitted to Medical Society: At a meeting of the Pennsylvania Association of Dental Surgeons, in Philadelphia, November 11, it was announced that hereafter dentists will be admitted as associate members of the Philadelphia County Medical Society. The first joint meeting of physicians and dentists will be at the College of Physicians, December 12.—Journal of the American Medical Association, November 22, 1924.

WISCONSIN

Child Labor in Wisconsin: The July-August number of Wisconsin Labor Statistics (bulletin of the Industrial Commission of Wisconsin) was entirely given over to the subject of child labor in Wisconsin. Statistics of certificate issuance in the state and in Milwaukee for the year ending June 30, 1924, and tables on educational attainments, physical and health defects, and industries entered, for children obtaining regular permits in Milwaukee, are included. During the period, 14,590 children in the state received first employment certificates, of which 47 per cent were for regular employment and 53 per cent were for vacation or after-school work. In the city of Milwaukee, 5,607 first employment certificates were issued, 2,507 of which were for regular employment. Of the 2,507 Milwaukee children receiving permits for first full-time employment, only 18 per cent were classed as sound and free from physical or health defects. (A physical examination is required in Milwaukee for every child entering industry permanently. Permits are issued to children having physical defects on the understanding that they are to have corrective treatment and they are required to report for re-examination and for record of their condition.) Fifty-six per cent of the children had defective teeth, 9 per cent had throat, nose or ear defects, 4 per cent had defective eyes, and 3 per cent had defects of the heart. About four-fifths of the Milwaukee children receiving first regular permits had completed at least the eighth grade or had attended school at least nine years; 1,619 or 65 per cent, entered manufacturing industries. The bulletin points out the conditions under which the treble compensation provision of the Workmen's Compensation Act is applicable to newsboys, namely, if the boy is employed without a street trades permit and badge. If the newsboy represents a number of employers at a given time, it is held that all of the employers represented are liable.

FOREIGN

Government Subsidy to Encourage Research: According to the Journal of the American Medical Association, the subsidy paid by the Japanese government to encourage scientific research amounts to a total of 135,000 yen for the present fiscal year. It has been awarded to about eighty research workers in fifteen medical colleges, seven special schools of medicine, pharmacology and dentistry and three institutes.

School Children's Teeth: The Education Committee of Dudley are affording facilities for the inspection of the teeth of school children, and for attention to be given at the clinic where it is often found that very young children have lost some of their permanent teeth, and that those of others are in an advanced state of decay. The difficulty, however, is to get mothers to realize the seriousness of such conditions.—Dental Surgeon.

Hygiene in Argentina: According to the first report of the Department of Hygiene (1923), much attention was given during the year to health education. A division for public education in hygiene was established and the local administrative authorities were instructed to arrange for lectures on health and for educational work through posters, advertisements, etc. Railroad cars supplied with a radio, a moving picture outfit, first aid, disinfecting material and other health supplies, were sent through the rural sections of the country. A child-welfare division was established in the department of hygiene, with an advisory board of representatives of child-welfare organizations and other experts. Several welfare stations doing prenatal and maternity work with the aid of visiting nurses were also established.—La Semana Medica, Nov. 22, 1924.

The Army's Teeth: The annual report of the health of the Army which has recently been issued makes it clear that

our soldiers possess very bad teeth. It is true that the Director-General of the Army Medical Service deals in his report only with 1921, and in that year eighty-one out of every hundred soldiers inspected were in need of dental treatment. As a general rule the newly joined recruit does not clean his teeth. The dental standard of the Army is not unduly high, all that is required being that the recruit should possess eleven out of the twenty-two points which are regarded as dental perfection. At the conclusion of the war the Army seems to have been the refuge of a large proportion of our C3 men, and its physicial standard during 1921 was very much lower than that which existed prior to the Great War. The rejections were 354 per thousand after the war, as compared with 205 before it, notwithstanding that many men were accepted who ought to have been rejected. There was 5 per cent of sickness in 1921, as against 3 per cent in 1913; moreover, the young recruits were so destitute of stamina that they reported sick much more readily than seasoned men.—Dental Surgeon, Oct. 4, 1924.

White Bread Peril: It is interesting to note that Sir Harry Baldwin, Surgeon dentist to the King, is playing a leading rôle in the campaign for the reintroduction of wholemeal flour, and has recently delivered quite a number of lectures to emphasize the dangers of white flour and bread. He says, "The great increase of dental decay is enormously due to the use of white bread, first because it forms a pulp which sticks to the teeth and induces fermentation, and, secondly, because it lacks the necessary ingredients for proper development of the jaws and teeth. When the roller miller removes the germ and the outer shell from the wheat-berry, he takes away the necessary vitamins, and the white flour remaining is mainly starch. When these vitamins are lacking, the teeth and bones are ill-formed and rickets are often produced. The physical deterioration of the race is due to such errors of diet as this, because in every other respect the people are better off. Bread is the chief ingredient of poor families' diet, but the bread supplied is a delusion and a snare, and is not worthy the title "The Staff of Life."—Dental Surgeon.

Dundee Students' Prize Essays: With a view to arousing more widespread interest in the question of thorough food mastication, Mr. William MacKenzie, Harecraig, West Ferry, has been instrumental in a thesis having been set by Dundee Dental College on this subject: "The benefits, dental, physical, and ethical, which may reasonably be expected if children are well trained in habits of thorough mastication." This was open to the five students who graduated this summer at the dental college, and to all others now attending any or all of the classes. Ten prizes of 5 pounds each were provided by Mr. MacKenzie, and it was decided that one of these would be awarded to each writer whose paper was marked 75 per cent by Dr. A. E. Kidd and Mr. Norman Black, the examiners. The theses submitted by the following have been adjudged by the examiners to be of the standard required for the MacKenzie prize: Messrs. G. F. Whyte, Arthur D. King, E. N. Black, J. R. P. Foster, R. B. Skinner, Harold Mackay, Edmund C. Paterson. Mr. McKenzie states that the scheme has been an entire success, and he proposed to renew his offer next year, and possibly the range of candidates might be extended beyond those who had studied or were studying at the dental college.—Dental Record, November, 1924.

Industrial Dentistry: The report on industrial dentistry as a factor in public health, given by the British Dental Association, throws some light on what is being done and can be done in this direction. The committee went on record as saying: "Of all causes of ill health, none is more widespread in its incidence than dental disease. About 90 per cent of the population are affected. Many cases of adolescent and adult malnutrition or dyspepsia are due to loss or decay of teeth in childhood." The significance of the value of dental service to the efficiency of industrial plants is now well recognized. It is reported that one firm bears half the cost of denture work for employes who have been in their employ for three years or upwards.—Alfred Asgis, in Review of Clinical Stomatology, October, 1924.

Teeth and Wholemeal Bread: Dr. H. Friend, medical officer at Christ's Hospital, states that since boys of Horsham began eating wholemeal bread twenty-two years ago, the average number of bad teeth per boy has decreased from 4 to 1.5.—Dental Surgeon, November 1, 1924.

GENERAL

"Baby" Bonds: Information is frequently asked regarding the investment of small amounts. With a few hundred dollars to dispose of, when better than

a savings bank rate is desired, bonds in hundred dollar denominations offer one of the most attractive mediums. Following is a list of ten bonds, diversified among government, railway, public utility and industrial issues, all of which are available in hundred dollar lots. At the bid price, the average yield is over 6 per cent.

	Bid	Asked	Yield
Balt. & Ohio, Tol.-Cin. div. 4s, 1959	67	69	6.14
Brooklyn-Man. Transit 6s, 1968	80	81	7.50
Humble Oil 5½s, 1932	98	100	5.68
Laclede Gas 5½s, 1953	93	95	6.01
Mo.-Kan.-Tex. pr. ln. 5s, 1962	85½	87½	5.82
Phila. Co. 5½s, 1938	94	96	6.27
Portland Ry. & Lt. 5s, 1942	84	86	6.55
United Kingdom 5½s, 1937	103	105	5.70
U. S. Realty & Imp. 6s, 1942	100	102	6.00
West. Pac. 5s, 1946	89	91	6.03

DENTAL CORPS

Army Medical Libraries: The surgeon general of the Army has had prepared a list of standard professional books (medical, surgical, laboratory, dental, veterinary, and nursing) which should be in the library of each Army hospital. The commanding officer of each hospital has been instructed to cause a careful inventory to be taken of the professional books on hand and make a special requisition on or before April 1, 1925, for such of the authorized books listed as are not on deposit in the library and for which substitute equivalent works (books of 1920 edition or later, covering the same field) are not on hand. Each authorized standard book requested will be followed by a list of the books in the library, giving the number and date of edition of each, devoted to the subject covered by the book requested. When the various libraries have been brought up to date and standardized, professional books will thereafter be furnished to each hospital without requisition. It is desired, however, that each commanding officer of a hospital submit to the surgeon general of the Army at any time titles of any professional books which he considers desirable additions to the standard libraries or as substitutes for any of the books authorized. The reasons for such preferences will be outlined by the officer.—Army and Navy Register.

Navy: Lieutenant Charles R. Wells has been ordered detached from duty at the naval hospital, Great Lakes, Ill., and to report for duty on board the U. S. S. Antares, flagship of train squadron 1. * * * An examination of candidates for appointment to the naval dental corps will commence on January 12, next, at the Naval Medical School at Washington. Applications to take the examination should be made to the chief of the bureau of medicine and surgery, Navy Department.—Army and Navy Register, November 22, 1924.

Army: Captain Vivian Z. Brown, to duty at Walter Reed General Hospital, D. C., upon completion of service in Philippine Department.—Army and Navy Register, November 8, 1924.

Army: Captain Clarence W. Johnson, from duties at Fort Des Moines, Iowa, Nov. 25, to San Francisco, and about Dec. 30 to Philippines for duty.—Army and Navy Register.

DEATHS

William Kelly Sinton, Colorado Springs, University of Iowa Dental College; a practicing dentist in Colorado Springs for forty years, and an active worker in professional organizations both within the state and outside, having served often in official capacities. He is survived by his second wife and two daughters and two sons, W. E. Sinton and J. J. Sinton, both dentists. Dr. Sinton was in excellent health until the operation that resulted in his death, at the age of 70.

W. A. DeBerry, Colorado Springs; Kansas City Dental College, 1895; associated with Dr. A. B. Baker in practice in Colorado Springs for twenty-three years, during which time he served the Colorado Springs Dental Society in all its offices and was vice-president (1920) and president (1921) of the Colorado State Dental Association. He died at the home of his father, Dr. J. E. DeBerry, Kansas City, Mo. He is survived by father, mother, a sister and a brother.

James W. Birkland, Chicago, Ill.; Northwestern University Dental School, 1896; husband of Eleanor, nee Joyce, father of Eleanor M.; died, November 10, 1924.

Edward T. Crowley, Chicago, Ill.; Northwestern University Dental School, 1908; died, Nov. 15, 1924.

Thomas A. Goodridge, Oak Park, Ill.; Chicago College of Dental Surgery, 1905; died, Nov. 11, 1924; aged 46.

CURRENT LITERATURE

EXTRACTS AND ABSTRACTS

Foreign Bodies of Dental Origin in the Lungs: In an analysis of 117 cases, E. G. Gill (Journal of the American Medical Association, November 29, 1924) includes those involving foreign bodies of the following types: teeth, dental burs, gold crowns, dental plates, fillings, blade of forceps, plaster of Paris, hard rubber from dental mouth gags, disks of dental cement and nerve canal reamers. Teeth are most often aspirated, and the right bronchus is the favorite site of lodgment. The majority of accidents occurred while the patient was under an anesthetic. The most definite symptom was a cough, only one case being reported in which this was not a symptom. Other symptoms were dyspnea, cyanosis, pain in chest, hemoptysis, nausea, fever, profuse expectoration, consolidation of the lungs, night sweats and actinomycotic rosettes in bronchial secretion (one case). The time of sojourn in the lungs varied from four hours to thirteen years. Symptomatic treatment was employed in thirty-eight cases. Sixteen of these patients died. In thirty-eight of forty-four cases, peroral bronchoscopy was successful. Lower bronchoscopy through tracheal wounds was successful in six cases. Thoractomy for drainage of lung abscess was necessary in twenty-three cases, with six deaths. Tracheolotomy was successful in three of four cases. Artificial pneumothorax was used successfully in one case. Of the 117 patients, eighty-four recovered and twenty-four died. In nine cases, the results were not known. When any portion of a denture is missing, the dentist should satisfy himself that the tooth is not in the bronchi. When the object was removed, there was no mortality. In neglected cases, abscess formation resulted. If diagnosis cannot be made from the history, a roentgenogram should be made. If this is inconclusive, bronchoscopy should be performed. The author states: "When the amount of dental surgery being done is contrasted with the small number of dental objects aspirated, the dental profession is to be congratulated on its technic."

Pillow Habits: According to the latest discoveries, another very important factor in the production of malocclusion is pillowing. It is commonly supposed that children go to bed and lie in all sorts of positions, never keeping the same position for any length of time, or never repeating the same position twice in succession. It has been known for many years that if a child lies continually on his back, he will flatten the back of his head; or, if he is not turned continually in infancy, the cranium will be unevenly contoured. Physicians always caution young mothers to turn their babies frequently. However, to prevent children from having colic, they are often put on their stomachs, and taught to lie more or less continually, on their faces. Sometimes they pillow first on one side, then on the other. If their faces rest on the mattress, they will be flattened and the dental arches narrowed, with consequent narrowness of the nose—sometimes of the orbit. If a child rests its face more on one side than the other, the face will develop asymmetrically, the dental arches being narrowest on the down side, the nose and lips slanting toward the up side. All children who pillow habitually on their faces in infancy have narrowed dental arches, which cause bunching of all the incisors in the permanent denture. Pillowing has been neglected by the dentist, yet it is one of the most important factors in producing malocclusion.—M. Evangeline Jordon, in Dental Items of Interest, November, 1924.

Roentgen Ray in Diagnosis of Tumors of Jaw: New and Figi (Journal of the American Medical Association, November 15, 1924) have found the roentgen ray of value in determining whether jaw tumors are primary in the jaw or the jaw is involved in an inflammatory or malignant process around it. Films should be taken at various angles. The tumors are classified clinically and

pathologically. Points that may aid in diagnosis are: shape of tumor; character of outline of shell of tumor; destruction of bone; production of bone. A knowledge of the gross pathology of bone tumors in general as well as of the special pathology of jaw tumors is essential to interpreting the roentgenograms. The patient's age and history may aid in the diagnosis. Tumors of the jaw are classified as benign solid tumors, benign cystic tumors, malignant tumors and inflammatory tumors. Exploration and removal of tissue for frozen section should be made in questionable cases.

Nutrition in Health Education: If we wish to secure healthy people it is not sufficient to organize a schoolroom campaign and get all the children to drink a glass of milk in the middle of the morning. For it may even be that the milk, though good for many of the children, is the last thing needed by this or that child whose parents are already over particular in this respect. This does not mean that the milk campaign is not a vital part of a nutrition program. It has already demonstrated its usefulness, but milk campaigns by themselves are not a nutrition program any more than milk by itself is a complete food. To build up a correct diet means an intimate knowledge not only of what milk will do for human beings but also of a long and detailed list of nutrition needs and the ways in which these may be met by other foods as well as milk. It is not a question of changing a single food habit but of classifying many food habits each having its own part in human health, and in organizing these into a program of nutrition-health. This is the service of a specialist in nutrition and the nutrition specialist is now ready or can be found at hand waiting to be called into service. Hand in hand with the doctor, nurse and the social worker must go the nutritionist, each with a special and necessary contribution to make and all working cooperatively to secure the best benefits of health education for the individual.—Flora Rose, in Public Health Nursing, October, 1924.

Trench Mouth: Writing of trench mouth as a bugbear commonly met in periodontia practice, R. C. Walden (Bull. Virginia State Dental Association, November, 1924) advises immediate treatment of the condition lest it go on to bone or deep tissue involvement. The teeth and gums are dried with absorbent cotton and painted liberally with a solution composed of iodin crystals, zinc iodid, potassium iodid and glycerin, triturated and combined with distilled water. Soft brushes or rubber cups and disks with flour of pumice are used to brush the crowns, the gums being scarred as little as possible. The free flow of blood resulting calls for constant flushing with a mild antiseptic. The mouth is then blocked off, and the ulcerated areas, gums and mucosa are thoroughly dried and then painted with a liquid composed of iodin, phenol and camphor. Patients are seen daily, and the treatment is continued, the teeth being scaled and curetted as soon as practical. Iodin, usually considered an irritant, has, in this form, been found curative and a comfort to the patient.

Cure-All Food Products: The recent advertising of so-called anti-fat foods again brings to mind the necessity for vigilance on the part of all charged with the responsibility of disseminating accurate information in regard to food products. In at least one piece of copy extravagant claims are made for a certain product as to its fat-reducing properties. These claims have been investigated and the product analyzed by well known authorities, with the result that practically all the statements made have been found to be baseless. Even when the products under consideration are not in and of themselves harmful, untold mischief may result simply from malnutrition on the part of the misguided victims who depend on these widely advertised products for body building and body regulating. The fact that the American Medical Association is offering the prestige of its name and backing to those industries suffering from this form of quackery is significant. The modern food trade association is a power for good in the allied worlds of business and research. Through its good offices valuable scientific data secured by the technicians is made available for the manufacturer; its own laboratories cooperate with those of the universities in research; its products take honorable places in the important field of nutrition, and its members should be afforded all possible support in the fight to banish fraudulent foods and harmful products from the field.—American Food Journal, November, 1924.

Anesthesia in Heart Conditions: In heart conditions, according to John Hay, (Dental Record, November, 1924), two problems arising in the work of the den-

tist concern the safety of administration of anesthesia and the response of the circulation to persistent toxemia—the relationship between a septic focus and certain symptoms of vasomotor instability. Cardiac bruits do not necessarily mean cardiac disease. Rapid action may indicate toxemia. The mouth is a common site for septic foci from teeth, gums or the nasopharynx. Alveolar and apical abscesses are a source of toxemia if there is no sinus. Pyorrhea gives rise to constitutional disturbances. The toxic heart is characterized by rapid action, variations in blood pressure, general weakness, dyspnea on exertion and palpitation. Drugs avail little; the focus must be removed. Fibrillation is no bar to anesthesia, but the patient must be treated as a heart case (rest, gentle purgation, digitalis therapy) until the heart action approaches the normal. Atropin cannot be administered previous to anesthesia as it neutralizes the action of the digitalis. Morphin may be given. Tachycardia is not a bar to anesthesia if the cardiac reserve is not unduly impaired; nor is valvular disease or bruits not due to disease if the myocardium is sound and the area of response is good. In the patient with myocardial degeneration, marked emphysema and a bad alcoholic history, especially if he is obese, anesthesia is more dangerous, especially light chloroform anesthesia and work causing shock or pain. The danger is heightened if epinephrin is injected during anesthesia. Ether is practically free from the liability to lethal fibrillation of the ventricle. The essentials of the technic are: gradual induction; elimination of fright and shock; keeping the patient pink. Cocain may cause faintness and rise of blood pressure, in which case amyl nitrite should be inhaled and a rapid carminative (menthol, spirits of ammonia and spirits of chloroform) be given. Strong coffee or caffeine given hypodermically is advocated, but strychnine is condemned, as a stimulant.

Dental Neglect of School Children: Perhaps no department of education has made greater advancement than has the supervision of the health of the children. By frequent examinations, diseases and defects are discovered and promptly remedied, thus removing a great handicap to the progress of the child and often preventing more serious consequences. Everywhere it is found that the disease most common among children and most often needing corrective attention is caries of the teeth. The significance of this omnipresent disease is fully recognized by educators and health authorities but the remedy and control of dental disorders is by far the least effective of all health measures. The responsibility for dental neglect of school children is not so much that of the school authorities as it is of the dentists of the community. Too often do we hear parents complain of the difficulty they experienced in persuading their dentist to care for the teeth of their children. Unquestionable evidences of neglect may be seen in the mouths of a large percentage of our child population for which some of us are responsible. The dental health of this generation is in our hands. If the teeth of the children in our community are wrecked by disease and neglect we are in a measure responsible.—Michigan State Dental Society Bulletin, October, 1924.

Infiltration Anesthesia: A new method of infiltration anesthesia is described by M. J. Eisenberg (Oral Hygiene, December, 1924) for the alleviation of pain in pericemental conditions that are not suppurative and for pulp extirpation, as well as for general extractions. Failure has attended this method in cases of suppurative pericementitis with pulp involvement, and it is also contraindicated in suppurative cases in which there may be danger of spreading infection by injection. The seat of injection is at the alveolar crest directly above the ligamentum circulare or directly below the neck of the tooth under the gum. A short platinum needle is used, and procain is the anesthetic employed. The method is not offered as a substitute for conductive anesthesia, but the author has found that it assures painless operations in child and adult.

Acid Dentifrices: It is extraordinary that many dentists still refrain from prescribing acid dentifrices on the plea that they would harm the teeth. Yet they have no hesitation in advising the use of acid fruits, such as oranges and apples, which are in contact with the teeth for longer than a dentifrice would be, and may possibly not be such active salivary stimulants. If the same policy of timidity were to pervade medicine, no physician would prescribe strychnin or morphia in physiological doses, because, forsooth, if too weak they did no good, and if too strong they did much harm. So also might a surgeon refuse to use a very sharp knife because, forsooth, if it slipped it might do harm.

Why is a dentist trained in physiology

and materia medica if it is not so that he may prescribe drugs, in suitable strengths and forms, to produce physiological effects for the benefits of his patients? As to "Acid Dentifrices" on the market:—During the last few years I have received numerous samples from all over the world, accompanied, as a rule, by profuse "literature," in which, not uncommonly, my name and writings are incorporated, entirely without my consent and without even, in any single case, the firm having the courtesy to ask if I had any objection to such a course. This is the more annoying because in no instance does the much advertised substance comply with my desiderata for an acid dentifrice. For the most part they are entirely unphysiological, and therefore may be very harmful.—H. P. Pickerill in Dental Science Journal of Australia, October, 1924.

Public and Mouth Hygiene: Public indifference to, and ignorance of, the dangers of mouth infection can only be overcome by adequate educational propaganda. But such education has been hampered in the past by the indifference of many conservative physicians and dentists and by a belief on the part of a large number of the profession that it is impolitic to spread professional "secrets" among the laity. Or, to put the matter bluntly, many dentists are opposed to public education on the matter of focal infections, because they hold to the belief that such dispersion of knowledge would adversely affect their incomes. Perhaps that belief is well grounded, though we are of the opinion that it need not be in the future, if the public can be educated to pay the dentist for advice and help on how to keep well instead of merely engaging a mechanic to replace or repair the ravages of dental caries.—Alfred Asgis, in Dental Facts, November, 1924.

Root-Filling: In a series of articles on treatment of pulpless teeth by the general practitioner, in discussing root filling, Cecil Pincus (Australian Journal of Dentistry) states that no tooth having infected dentin should remain in the mouth. Sterilization is absolutely indispensable, but if the cavity is properly sealed, it is not necessary to fill the root canal. Gutta percha is the most suitable filling known, being best tolerated by living tissue. The contention that it absorbs foul-smelling substances is not well taken, because, if the proper technic is employed, there will be no such substances present. Antiseptics are condemned as useless, or worse than useless since they cause damage to the apical tissues. A root-canal must be perfectly dry before filling is attempted, weeping of serum or pus calling for treatment until this condition is overcome. If this is impossible root amputation becomes necessary. The canal should then become temporarily sealed at the apical end by a blood clot, but it is always advisable to fill a root-canal before root amputation if the canal can be dried. Hydrogen peroxid followed by 90 per cent alcohol, should be used to clean the canal before root filling. The chloropercha is introduced with a pumping motion. If the dentist has no means to check the operation by roentgen ray, he should practice filling the roots of an extracted tooth. The process, which is described in detail, has been carried out routinely by students in the Melbourne Dental Hospital for the past fifteen years.

Early Preventive Dentistry: The natural history of the teeth, although a subject curious in its nature, and important in its application to human comfort, has not sufficiently engaged the attention of the practitioners of medicine and surgery. The preservation of the teeth during the continuance of life, is very much affected by the care which has been bestowed upon them during the earliest periods. The first set, or temporary teeth, are very liable to become diseased; and they seldom, in the human subject, give way by a natural process in sufficient time to permit the second set, or permanent teeth, to arrange themselves in their proper order; hence the state of the permanent teeth is much influenced by that of the temporary during childhood, and attention to them at this period is of the greatest consequence, for they may then be preserved from falling into disease, and that irregularity of arrangement which occasions so much deformity may certainly and easily be prevented. A knowledge of the changes which the teeth undergo, and the circumstances which attend the progress of the second dentition is highly necessary, as no safe or successful practice can be expected without a correct acquaintance with the anatomy and natural history of these parts.—J. Fox, 1803.

Dangers of the X-Ray: I have adopted for myself as a maximum dose to be given to the average patient 1,400 milliampere seconds, using an aluminum screen and a 4-inch spark gap, with a 15-inch target skin distance. As a matter of fact, one rarely ever approaches this

amount in diagnostic dental radiography. If one is doing X-ray therapy the exposure should be checked most carefully. However, the greatest hazard is not to the patient but to the operator, because the effects of the X-ray are cumulative. Moreover, the injurious effects may not, and usually do not, manifest themselves until real injury has been done. For self-protection the operator should keep as far away from the tube as possible. He should allow no direct rays to fall on him. He should have some absorbing substance between himself and the tube. By "absorbing substance" I mean lead or lead glass. If an open lead-glass shield is used around the tube it would be safer for the operator to stand behind a lead shield and look through lead-glass. If the tube is encased in lead-glass, the operator will not need other protection, unless possibly he is operating constantly. In fluoroscopic work rubber aprons and gloves, impregnated with lead, must be used and other precautions observed. In dental radiography the operator should never hold the film or expose any other part of his body to the direct rays. If there is any question of rays reaching the body of the operator he can pin one or more X-ray films to his clothing and, after working a given length of time, develop them to see if they have been affected by the rays.—George R. Warner, in Dental Digest, November, 1924.

Influence of Mother's Diet on Rickets: In view of the newer knowledge concerning hereditary and congenital factors in the etiology of rickets, Hess and Weinstock (Journal of the American Medical Association, November 15, 1924) present a reconsideration of this aspect of the etiology from both a clinical and an experimental point of view. They conclude, from their experiments, that rickets cannot be prevented by improving the diet of the mother previous to pregnancy, during pregnancy and throughout lactation, although it can be mitigated to a certain degree. Infants were not protected by giving the mother cod-liver oil during the last two months of pregnancy. On the other hand, the fact that premature infants are markedly susceptible to rickets shows that prenatal nutrition does play a rôle. A consideration of the experimental evidence, of clinical tests, of the susceptibility of bottle-fed compared to breast-fed babies, and the striking seasonal incidence leads to the conclusion that rickets is mainly of postnatal origin, although its incidence and severity may be influenced by improving the environment and nutrition of the infant. Until these postnatal factors are corrected, we cannot hope to prevent rickets.

Dentistry and Internal Medicine: Syphilis in relation to mouth conditions is well known to you, but just a word in warning, even though it has often been heard before: Bone necrosis of unexplained origin may be syphilitic; also all cases of so-called Vincent's angina may not be due to the combination of the long bacillus and Vincent's spirochaete, but rather to the "spirochaete pallida"; undermined ulcerations in the oral cavity should cause the attending dental surgeon to eliminate syphilis before proceeding with dental work; both from the danger to himself, the danger to later patients, and also the knowledge that your work may be only temporary and thus react upon the operator himself. I am convinced that the time is near when a physician will be duty bound to inform a dentist of his patient's syphilitic infection, if not by common custom then by compulsory legislation. One physician informs another of the patient's history and findings; why shouldn't the dental surgeon enjoy the same privilege, as well as safeguard? The same rule applies to pulmonary tuberculosis.—Harold C. Bean, in Northwest Journal of Dentistry.

Pathology of Gingivitis and Periodontitis: Writing on this subject, Graham (Oral Health, November, 1924) states that it was the earlier belief that pyorrhea always begins from without (Riggs), and scaling and cleanliness were therefore the remedy. Another theory was that it was an infective process: gingivitis followed by bone atrophy (Miller, Poemer and Langraf). Black differs in that he thinks the major cause of absorption of alveolar bone is due to detachment of the pericementum from the cementum. A second group thinks that there are two types of periodontitis of quite different etiology: periodontitis simplex and periodontitis complex. This view is held by Talbot, Hopewell-Smith, Fleischman and Gottlieb, and also by Box, who holds that while the rarefaction of the alveolar process is an early spectacular phase of this disease and always precedes the gingival lesion in this group, the essential lesion is in the pericementum. To the initial lesion of a true periodontitis he has given the term pericementitis fibrosa. There is much speculation as to the causative factors in the disease. The

author feels that local repeated simple injury, resulting in nutritional changes is perhaps the commonest factor.

Prevention of Chronic Periodontitis: Based on clinical and pathological findings, chronic inflammation of the periodontium may be classified as follows: (1) chronic periodontitis (simplex); chronic periodontitis (complex). In both types of chronic periodontitis, injection has gained entrance into the cemental gingiva, and produced a pocket progressing into the deeper tissues. Normal gingivae are highly vascularized, resistant tissues. Some agency must lower their resistance, in order that the ever-present bacteria may gain entrance into these tissues, and it will be recalled that the weak link in the chain of protection from infection is the thinnest and breaks in the continuity of the epithelium on the crevicular surface of the marginal gingivae. There is a long list of irritants which can produce a gingivitis—such as plaques, rough enamel, etched enamel, rough edges of fillings, food débris and food impaction. By progression of the infective inflammatory process, a pocket is formed in the cemental gingiva. By extension of this pocket, bone absorption takes place, and the pericementum is infected.—C. E. Sutton, in Oral Health, November, 1924.

Prenatal Development of Teeth: In drawing the conclusions of the various lines of research upon this subject to a focus, one is forced to take the position that whatever influences for good or ill are brought to bear upon the teeth of the developing fetus through the agency of its mother must be of a complex nature. Factors of heredity, race, age, fatigue, exposure to industrial poisons, exposure to sunlight, mental depression, infection, derangements of the endocrines and dietary deficiencies may all play some part. But whatever the contributory factors may be we must always fall back upon the basic building materials which are contributed by the mother's food. We have seen that this must not only contain adequate quantities of fats, carbohydrates, protein and the inorganic salts but also the accessory food substances which we call vitamins. The calcium and phosphorus must be in balanced relationship and an essential vitamin for the fixation of the calcium salts must be present. A growing number of investigators are taking the position that the nutritional requirements are fundamental and that the other factors mentioned may or may not have an influence.—Richard Arthur Bolt, in Dental Summary, November, 1924.

Full Denture Technic: Unquestionably, the most important step in denture construction is the transfer of the case to the articulator. A basic fundamental principle of this step is that every tooth in the mouth occupies its certain definite position as related to all the contiguous parts, and each follows certain definite movements which have definite relation to the movements of the jaws as a whole. The antero-posterior and lateral positions are not sufficient; the vertical position is fully as important. This applies to partial dentures, crowns, bridgework, fixed or removable, and even to inlays. It is assumed that the dental articulator used reproduces the mandibular movements. To digress for a moment: clinical experience proves most conclusively that variation of the inclination of the condyle paths is comparatively slight. This fact is not disclosed by adjustable articulator condyles unless the vertical transfer mounting is used; in truth, the opposite is shown. Extreme variation is noted in an individual case due entirely to the height at which it is mounted in the instrument. Inaccurate transfer makes it impossible to properly locate the basic dental curve, which is a fundamental governing maintenance of stability and suction of the dentures.—Frank Wadsworth, in Northwest Journal of Dentistry, November, 1924.

Care of the Temporary Teeth: Why will the dentist not fill temporary teeth? Is it not our duty to the child to see that these teeth are retained in as perfect condition as possible, until it is time for the permanent teeth to erupt? But may we menace the health of the child by leaving a tooth in the mouth with a cavity, a breeding place for bacteria? Then why not try to retain this tooth by placing a filling? True, it is often difficult to get sufficient retention without disturbing the pulp, to place a filling in a temporary tooth, but why not try, and why not always, if necessary, choose the lesser of two evils, the early extraction of the temporary tooth, rather than its retention in the mouth in a diseased condition? Then, if your conscience still bothers you, why not set an appliance to retain the space left by the extraction of the temporary teeth, until it is time for the permanent teeth to erupt? We have found the parents willing to do all that is necessary for the preservation of the health of their children, but you, the

dentist, must suggest the correct course to pursue.—A. P. Baur, in the Chicago Dental Society Bulletin, November 28, 1924.

Syphilis, Tuberculosis Rachitis and Malocclusion: We know that the relation between face and skull is one to eight in the new-born baby, while it is one to two in the adult. The normal development of the facial skeleton is altered in rickety subjects, so much that facial bones develop after those of the skull. The dental arch is transversely reduced while sagitally it is prolonged and in the median line ends like a beak (second class, first division Angle class), or the anterior teeth are strongly inclined lingually (second class, second division), and often their incisal edges are in contact with the vestibular gum of the lower, while the alveolar processes are divergent and outwardly inclined in the posterior part. The lower jaw is shortened sagitally, and the dental arch is flattened anteriorly, forming two angles with the canines, while posteriorly the two halves are inclined lingually. The alterations produced by rickets on dental development and on the structure of the teeth are most important. The eruption of the teeth is frequently delayed. Steiner noticed the case of the eruption of the first teeth in a child four years old. It sometimes happens that groups of teeth are absent both in the deciduous and permanent sets, while the others are scattered. Frequently, there is microdontism and abnormality of form, besides the common hypoplasia. The incisors, and more often the canines, are pointed. The microscopical alterations of the bones of rickety subjects are characterized by phenomena of reabsorption of the incompleted osseous tissue, owing to lack of lime salts, and for that reason called osteoid. Such a phenomena appears contemporarily in all bones. Many deny that there is a relation between hypoplasia of the enamel and rickets, but others, as Preiswerk and Sternfeld, admit it.—C. D'Alise, in Dental Science Journal Australia, November, 1, 1924.

Treatment of Rickets: Fortunately, the treatment of rickets is on a more certain basis than the etiology. Breast milk from mothers who are on proper diets will prevent rickets. Infants who have rickets may be cured by feeding them proper food and by the administration of cod-liver oil, or by exposure of the body to ultra-violet light rays, which are found, for example, in direct sunlight. The bone disturbance in rickets is essentially due to a lack of calcium deposit, and the consequent overproduction of cartilage cells and osteoid. The bones become soft, and are easily bent or fractured; the overgrowth of cartilage cells at the epiphyses gives the characteristic enlargement. The teeth undoubtedly share a somewhat similar fate, except for the enlargement. They are often slow in appearing and because of their softness become decayed early. A large percentage of all babies in a given community will, at some time, show more or less evidences of rickets. The symptoms are often slight and are frequently not diagnosed correctly. Nevertheless, rickets exists and may cause sufficient softening of the teeth to permit their early decay. The striking parallel between the incidence of rickets and the incidence of dental caries, shows beyond doubt that, from a preventive standpoint, the problems are the same.—Basil B. Jones, in Northwest Journal of Dentistry, November, 1924.

Nutrition: Building the human or animal body is in some respects much like building a house. If one is supplied with hardware, lumber, cement and other building materials and also has workmen, it is possible to build a house. In this analogy we may compare the vitamins to workmen. Without vitamins we cannot build or maintain the human body any more than we can build the house without workmen. Just as there are different kinds of workmen such as masons, carpenters, plumbers and paper hangers, needed for building the house, so different kinds of vitamins are needed to build a satisfactory human or animal body.—A. D. Holmes, in American Food Journal, October, 1924.

Health Education: Health education in our schools is receiving a lot of attention on the part of educators, and we are not disposed to condemn the idea but we are opposed to the kind of health education that is being given out by a lot of school teachers who are proselyting for the Christian Scientists, chiropractors and other medical pretenders. All health education in our schools ought to be under the supervision of health officers who are reputable medical men, and not given by teachers who have fantastic and inconsistent ideas concerning health and its preservation.—Journal of the Indiana State Medical Association, October, 1924.

Nutrition of School Child: A child with physical defects such as adenoids, diseased tonsils, aching and decayed teeth, inflammation of gums, and similar con-

ditions, when neglected, seldom grows properly even on a most carefully considered diet. Provision must be made and these defects corrected before the child can be expected to thrive and grow to be strong and healthy.—Taliaferro Clark, in Public Health Reports.

Physiology of the Alimentary Tract: In discussing the physiology of the alimentary tract as a whole, F. P. Wisner (International Journal of Orthodontia) stressed the importance of mastication as the means of breaking up the food into smaller particles and thus increasing the total surface that may be acted on by the digestive juices, and as also serving to liberate from the microscopic capsules of cellulose and fiber many foodstuffs which might otherwise entirely escape digestion. In closing, he states that oral conditions play a most important part in the integrity of the entire alimentary tract; referring to the combined digestive processes as "this beautiful mechanism by means of which the body breaks down the complex foodstuffs into their constituent components and later builds them up again into its own peculiar type of substance."

Progress in Dentistry: During the past twenty-five years the dental profession has been exceeding the speed limit all the time, and during that time such a vast amount of useful, as well as useless, information has accumulated that men of ordinary intelligence are almost bewildered. We are a little dazed by the rapidity of the big events. I know of no profession that has made such revolutionary advancements. The thing that makes dentistry interesting is the fact that something new is coming all the time. A few years ago, a man could acquire about all the knowledge then extant in dentistry, but today it is utterly impossible for any one man, no matter how intelligent, to know it all. Some may try to convey that impression, but it only makes them ludicrous.—C. E. Conley, in Dental Digest, October, 1924.

Incidence of Cleft Palate and Harelip: J. S. Davis (Amer. Jour. Surg., September, 1924) found seventeen clefts in 15,565 deliveries of white women and seven in 15,520 deliveries of colored women. More than 50 per cent of cases were in first children, and there were associated anomalies in 25 per cent of cases.

Surgical Diathermy: In an article on surgical diathermy in the treatment of new growths of the face and mouth, Albert F. Tyler (Journal of Radiology, October, 1924) gives the literature and discusses the principles, covering voltage, interruptions, amperage, time, method of action and method of application. Under cases suitable, he lists small, operable and inoperable lesions (so classed because of inaccessibility, extensive involvement and vascularity). The advantages are: accuracy of control; lack of bleeding, pain and after-pain, and comparative smallness of scar.

Lead Poisoning: The most common and easily detected sign of lead absorption is the lead line in the gums. It is caused by a deposit of lead sulphid in the cells of the deeper layers of the gums, and, if bismuth is excluded, is positive evidence that lead is, or has been, present in the blood stream. This line occurs as a fine stippling near the gum margin and may be readily demonstrated by inserting a flat white toothpick between the gum and the tooth. This sign is more likely to be present among those lead workers who have bad teeth and diseased gums, but I have found it present many times when both teeth and gums were healthy.—M. D. Shie, in Journal of the American Medical Association.

Practical Child Psychology: There can be no simple rule for dealing with children of all temperaments. It is also found in practice that the temperaments of the parents, in many instances, constitute a much more serious problem than do those of the children. But the dentist often has no opportunity to know or deal with the parent before he sees the child, hence much trouble may have been made for him long before the child appears in the office. The psychology needed for handling both the parent and the child is made up far more of a mixture of sympathetic understanding and common sense than of a system of rules for the understanding of human nature. The child psychologist who devotes the bulk of his time and energy to understanding and helping childish misfits does not always score a success. There are some children so suspicious and so self-centered, or so excessively timid and apprehensive that they can never really respond in a normal fashion to any unusual or trying situation. In the end, a policy which takes into consideration the child's reaction and attitude will greatly add to the peace of mind of the dentist, besides making the problem of dental work for the child a far less difficult one. If all children become accustomed to and

interested in the value of prophylactic dental work, humanity will be spared much of the apprehension and actual pain which dental work often causes, and the regular visits to the dentists, which everyone knows to be so important, will not be so easily "forgotten."—Olga Bridgeman, in International Journal of Orthodontia.

Longevity of Doctors and Dentists: Doctors, according to "The Londoner's Diary" are not blessed with long life. The reasons suggested are that they are exposed to infection; that they are obliged to keep irregular hours, and that they make bad patients. It is very questionable whether the first of these reasons is of much importance. It is, as a matter of fact, comparatively rare to hear of a doctor contracting a fatal malady from his patient; and it must be remembered that he knows about the risks and can take precautions. The man in the street who sits inside a 'bus or a tube and breathes in a multitude of malevolent microbes on his way to and from his work does so generally in sublime ignorance and with no precautions whatever, continues the Londoner. "Doctors are distinctly longer lived than dentists. Dentists are much worse than doctors, which suggests that the evils of a sedentary life more than counterbalance the regularity of the hours." Dentistry may be described in a variety of ways, but it is very curious to find it called a sedentary occupation. It would be interesting to know how often and for how long during his working day the average dentist sits down. And as regards the regular hours, there is little to say. It is true that the doctor's hours are, on the average, less regular than the dentist's; but we are frequently asked to minister to urgent dental needs on Sunday, Bank Holidays, and at night time. For such ministrations, by the way, we never remember receiving a fee. It is always said by those that are supposed to know that the dentist's life is a short one, and, we hope, a gay one. We would not doubt for a moment the accuracy of statistics bearing upon the subject. Statistics are, of course, beyond criticism. We would merely like to record the following facts. When the Royal Dental Hospital of London first saw the light, six honorary dental surgeons were appointed on its staff. Of these Robert Hepburn died at the age of 92, Thomas Underwood at 82, Thomas Arnold at Rogers at certainly well over 80, Sir John Tomes at about 80, and neither Samuel Cartwright nor the sixth surgeon, whose name escapes us, was very much younger than this. This seems quite a good average for the whole staff of a London dental school.—Dental Surgeon.

Surgical Removal of Teeth: At the present time our community apparently is too small to warrant an exodontist establishing himself in our midst, who, by adopting good, sound surgical principles, can, and does, remove these difficult teeth that call for all the surgical skill at one's command. It behooves us, therefore, as ordinary practitioners, to be up and doing, and master the general surgical principles for ourselves, so that we may undertake the removal of these teeth that I have just cited with that degree of assurance that spells success in the eyes of the physician and patient and dentist.—A. R. Walker, in Australian Journal of Dentistry.

Attacks on White Bread: Well informed dietitians and food experts have abandoned their attacks on white bread and now give it its rightful place on the table supplemented as it is by fruits and vegetables, and especially since in its own substance it now generally contains an adequate amount of milk solids. It is still true that many physicians recommend the elimination of white bread from the diet. It must be remembered, however, that these men received their education in nutrition in the days before vitamins were discovered, and when they had to reason from effect to cause. They saw only the results of eating a diet of which white bread was an important part, and wrongly interpreted them, reaching the conclusion that bread was the cause of untoward conditions, whereas we now know that nutritional disorders do not follow the eating of bread, but rather the failure to get other necessary things at the same time.—American Food Journal (Report of American Bakers' Association), November, 1924.

Mouth Breathing: It is difficult to estimate how much mouth breathing and nasal obstruction affect the mental development, but the open mouth with flat chest and thrusting forward of the face with the occasional hardness of hearing always gives the impression of a want of intelligence and alertness. The treatment of mouth breathing is carried out on the following lines: (1) Nasal obstruction, if present, should be corrected as early in life as possible. Nasal obstruction should not only be detected by

the tests such as holding a feather or flake of cotton wool in front of the nostrils, but by the presence of mouth breathing during exercise. (2) Breathing exercises to promote nasal breathing and to expand the chest. (3) Early correction of open bite and superior protrusion, with appliances to correct the habit of mouth breathing and snoring. (4) The late case with the thin, narrow nose with ala collapse is a most difficult type to improve or cure, and a forlorn attempt to increase the width of the nasal cavity by a dental appliance which expands the maxilla and opens the intermaxillary suture has been attempted. The modern orthodontist if given an early opportunity can mold and train the growth of the jaws as a gardener trains a tree. He is also in a position to detect mouth breathers at an early age and, in cooperation with the rhinologist and drill sergeant, he is able to render a great service by improving the physique of the nation.—E. D. D. Davis, in International Journal of Orthodontia.

Discoverer of Vitamines: Beyond question the discovery of the vitamines was one of the most important ever made in the science of nutrition. The discoverer, Dr. Casimir Funk, is the author of "The Vitamines," the English edition of which was published by the Williams & Wilkins Company.

Doctor Funk was born in 1884 in Warsaw, Poland. Owing to hard conditions prevailing then in Russian Poland, he left his country early and received his university training in biology and organic chemistry in Geneva and Berne, Switzerland. Subsequently he received instruction from Gabriel Betrand at the Pasteur Institute of Paris, Abderhalden and Emil Fischer in Berlin, and Weinstraud, an able collaborator of Minkowski, in Wiesbaden.

The year 1910 found him at the Lister Institute of London, occupying himself there with the study of the causation of tropical beriberi. Out of the then existing chaos he created, after many struggles and controversies, the present well known science of the vitamines. Prior to this time nothing but suppositions were found in the literature—some regarded nutritional diseases as due to food or intestinal toxins, others regarded them as infections. It remained for Doctor Funk to recognize the relationship of the avitaminoses to dietetic principles. The importance of his work was soon recognized, and in London he held first the Lister, later the Beit Fellowship, and received the degree of D. Sc. from the University of London on the basis of his researches on the vitamines.

In 1915 he was called to New York, first to the Cornell Medical School and Memorial Hospital, then, after an interruption during the war, to Columbia Medical School. In 1923 his services were loaned by the International Health Board to the Polish Government for two years to organize a biochemical department at the newly created School of Hygiene in Warsaw.—The Kalends.

Building a Successful Practice: The study club and clinic unit is especially valuable to the rural practitioner, not that the country dentist is not as skillful as his city brother, but because he must be a better all-round man. The city dentist's mistakes are lost sight of in the many activities of city life; the mistakes of the country dentist are advertised to the whole community. The city man has the advantage of consulting with specialists or skillful friends if some procedure baffles him; the country dentist has to work out his own problems. Take as an illustration, denture construction, partial and full, which plays such an important part in the success and failure of a dentist, especially the country dentist. I know of no branch of dentistry that has made greater advancement than impression taking and denture construction, and the man who masters this new technique will soon establish a reputation that will overshadow the competitor who is too busy to attend dental meetings or join study clubs. The laity will soon learn of your efforts to keep up with the times, and you will be rewarded by their confidence and patronage.—D. M. Gallie, in Oral Health.

Announcements

CALENDAR OF MEETINGS

NATIONAL SOCIETIES

Alumni Association of the University of Buffalo School of Dentistry, February 26-28, 1925, Buffalo, New York.

American Association of Dental Schools, March 19-21, 1925, Chicago, Illinois.

American Dental Association, September 14, 15, 16, 17, 18, 1925, Louisville, Kentucky.

American Dental Society of Europe. July 28-31, London.

American Medical Association, May 25-29, 1925, Atlantic City, New Jersey.

American Society of Dental Radiographers, January 20, 1925, Chicago, Illinois.

American Society of Orthodontists, April 14-17, 1925, Atlanta, Georgia.

Fédération Dentaire Internationale, August 5-7, 1925, Geneva, Switzerland.

Marquette University Dental Alumni Association, February 18-20, 1925, Milwaukee, Wisconsin.

Philadelphia Dental College Alumni, April 15, 1925, Philadelphia, Pennsylvania.

Seventh International Dental Congress, August 23, 24, 25, 26, 27, 1926. Philadelphia, Pennsylvania.

STATE SOCIETIES

District of Columbia, at George Washington University, Washington, D. C., second and fourth Tuesdays in each month from October to June inclusive.

National Capital at Washington, D. C., first Tuesday of every month.

January (1925)

Chicago Dental Society, Chicago (21-23).
Rhode Island, Providence (13-14).

February (1925)

Minnesota at Kenwood Armory, Minneapolis (10-13).

April (1925)

Alabama, at Mobile (8).
Connecticut, at Hartford (April 30-May 2).
Kansas, at Hutchinson (20-22).
Michigan, at Grand Rapids (6-8).
New Jersey, at Newark (8-11).
Oklahoma, at Oklahoma City.
Virginia, at Staunton (27-29).

May (1925)

Arkansas, at Little Rock (25-27).
Illinois, at Peoria (12-14).
Indiana, at Indianapolis (18-21).
Iowa, at Des Moines (5-7).
Maryland, at Baltimore (4-6).
Massachusetts, at Boston (4-8).
Missouri, at Kansas City (11-13).
Nebraska, at Omaha (third week).
New York, at Albany (13-16).
North Carolina, at Pinehurst (12-14).
North Dakota, at Fargo (first week).
Pennsylvania, at Reading (5-7).
Tennessee, at Knoxville (first week).
West Virginia, at Beckley (18-20).

June (1925)

Colorado, at Colorado Springs (18-20).
Maine, at Bangor (24-26).
New Mexico, at Albuquerque (20).
South Dakota, at Watertown.
Southern California, at Los Angeles.
Utah, at Salt Lake City.
Washington, at Spokane (1).

July (1925)

Rhode Island, at Newport.

September (1925)

Kentucky, at Louisville (11-12).

MEETINGS OF THE STATE BOARD OF DENTAL EXAMINERS

Delaware, at Wilmington. Jan. 21-22, 1925. Secretary, W. S. P. Combs, Middletown, Delaware.

Massachusetts, at Boston, March 9-12, 1925. Secretary, J. N. Carriere.

North Carolina, at Raleigh, January 12, 1925. Secretary, F. L. Hunt, Asheville, North Carolina.

North Dakota, at Fargo, January 13-15,

1925. Secretary, W. E. Hocking, Devils Lake, North Dakota.

Oklahoma, at Oklahoma City, January 5, 1925. Secretary-Treasurer, L. M. Doss, Oklahoma City, Oklahoma.

South Dakota, at Sioux Falls, January 5-7, 1925. Secretary, G. G. Kimball, Mitchell, South Dakota.

ARKANSAS STATE DENTAL ASSOCIATION

The thirty-eighth annual meeting of the Arkansas State Dental Association will be held in the Marion Hotel, Little Rock, Ark., May 25-27, 1925.

H. J. CRUME, *Secretary,*
212-214 Armstrong Bldg.
El Dorado, Ark.

CONNECTICUT STATE DENTAL ASSOCIATION

The sixty-first annual meeting of the Connecticut State Dental Association will be held at the Central High School Building, Hartford, Conn., April 30, May 1 and 2, 1925.

CHARLES W. ROBERTS, *President,*
Hartford, Conn.
S. E. ARMSTRONG, *Secretary-Treasurer,*
New Haven, Conn.

PROGRAM OF THE MINNESOTA STATE DENTAL ASSOCIATION

Minneapolis Armory, Minneapolis, Feb. 10-11-12-13, 1925.

TUESDAY, FEBRUARY 10

Morning

8:30—Registration.

9:30—Invocation.

9:35—Address of Welcome.
Mayor George E. Leach, Minneapolis, Minn.

9:45—"Fundamental Factors in Crown and Bridge Construction."
E. T. Tinker, Minneapolis, Minn.
Discussion.

11:00—Partial Dentures.
W. E. Cummer, Toronto, Canada.
Discussion.

Afternoon

2:00—"Dental Education."
William J. Gies, New York City.
Discussion.

3:30—First Business Session.
President's address.
Committee reports.

Evening

6:30—Annual Banquet.

WEDNESDAY, FEBRUARY 11

Morning

9:00—"Nutrition, in Relation to Bone and Tooth Growth."
L. S. Palmer, University of Minnesota, Minneapolis, Minn.
Discussion.

10:00—Second Business Session.
Report of Committee on Constitution and By-Laws. The final action on the amended Constitution and By-Laws will be taken at this time.
Report of Committee on President's Address.

Afternoon

2:00—General Clinics.
C. H. Turnquist, Director.
These clinics will cover the various phases of dentistry; subjects and clinicians to be announced.

THURSDAY, FEBRUARY 12

Morning

9:00—"Some Oral Surgery Problems of the General Practitioner."
Frederick F. Molt, Chicago, Ill.
Discussion.

10:00—Full Denture Prosthesis.
John W. Needles, Pueblo, Colo.
Discussion.

11:00—Third Business Session.
Election of Officers.
Committee reports.

Afternoon

2:00—"A Rational Method of Orthodontic Treatment for the General Practitioner."
J. N. Pike, Minneapolis, Minn.

3:00—Exhibitors' Clinics.
The rest of the afternoon will be turned over to the exhibitors for demonstrations.

FRIDAY, FEBRUARY 13

Morning

9:00—"How to Obtain Mouth Health."
W. J. Charters, Des Moines, Iowa.
Discussion.

10:00—Dentistry for Children.
P. H. Thomas, Minneapolis, Minn.
Discussion.

11:00—Fourth Business Session.
Committee reports.
Unfinished business.
New business.

Afternoon

2:00—General Clinics.

INDIANA STATE DENTAL ASSOCIATION

The sixty-seventh annual meeting of the Indiana State Dental Association will be held at the Claypool Hotel, Indianapolis, May 18-21, 1925.

C. L. BYERS, *Secretary,*
Indianapolis, Ind.

MARYLAND STATE DENTAL ASSOCIATION

The annual meeting of the Maryland State Dental Association will be held at the Southern Hotel, Baltimore, Md., May 4-6, 1925. Exhibitors are requested to communicate with

NORVAL H. MCDONALD, *Secretary,*
304 Morris Building.
Baltimore, Md.

MICHIGAN STATE DENTAL SOCIETY

The Michigan State Dental Society will hold the state convention in Grand Rapids, April 6-8, 1925. The society headquarters will be at the Pantlind Hotel.

W. W. GIBSON, *President,*
Grand Rapids, Mich.
W. R. DAVIS, *Secretary,*
Flint, Mich.

NEW MEXICO DENTAL ASSOCIATION

The New Mexico Dental Association will meet in Albuquerque, June 20, 1925.

MELVIN R. CHAPIN, *President,*
Gallup, N. M.
L. C. COX, *Sec'y-Treas.,*
Cloves, N. M.

MASSACHUSETTS BOARD OF DENTAL EXAMINERS

The Massachusetts Board of Dental Examiners will hold an examination for registration for both dentists and oral hygienists in the city of Boston, March 9-12, 1925. Full information, application blanks, etc., may be secured at the office of the secretary, Room 146, State House, Boston. All applications must be filed at this office at least ten days before date set for examination.

J. N. CARRIERE, *Secretary.*

NORTH DAKOTA STATE BOARD OF DENTAL EXAMINERS

The North Dakota State Board of Dental Examiners will hold its next regular meeting in Fargo, Jan. 13-15, 1925. All applications must be filed with the secretary ten days before the examination. For application blanks and further information address

W. E. HOCKING, *Secretary,*
Devils Lake, North Dakota.

THE AMERICAN SOCIETY OF DENTAL RADIOGRAPHERS

The midwinter meeting of the American Society of Dental Radiographers will be held at the Drake Hotel, Chicago, Tuesday, Jan. 20, 1925. A program of exceptional interest is being prepared. All members interested in radiography are invited to attend.

ARNOTT A. MOORE, *President,*
131 Allen St.,
Buffalo, N. Y.
MARTIN DEWEY, *Secretary,*
501 Fifth Avenue,
New York City.

ALPHA ZETA GAMMA

The Alpha Zeta Gamma Dental Fraternity will have headquarters at the Drake Hotel, Chicago, during the session of the Chicago Dental Society, and will hold their annual meeting, Thursday evening, Jan. 22, 1925. For further information, write to the publicity committee, in care of

ALOIS D. NEWBERGER,
1002 Capitol Bldg., 159 North State St.,
Chicago, Ill.

MARQUETTE UNIVERSITY DENTAL ALUMNI ASSOCIATION

The annual meeting and clinic of the Marquette University Dental Alumni Association will be held at the Auditorium, Milwaukee, Wis., Feb. 18-20, 1925. All members of the American Dental Association are cordially invited to attend.

J. V. SENGPIEL, *Secretary,*
695 Astor Street,
Milwaukee, Wis.

PSI PHI FRATERNITY

The Chicago alumni chapter of Xi Psi Phi will hold its annual luncheon at 1 p. m., Friday, Jan. 23, 1925, at the Drake Hotel, Chicago. The luncheon will be served immediately after the closing of the Chicago Dental Society's meeting, and an invitation is extended to all visiting members of Xi Psi Phi to attend.

E. W. SWANSON, *Secretary,*
25 East Washington St.,
Chicago, Ill.

ALUMNI ASSOCIATION OF THE UNIVERSITY OF BUFFALO SCHOOL OF DENTISTRY

The twenty-fifth annual meeting of the alumni association of the University of Buffalo School of Dentistry will be held at the Hotel Statler, Buffalo, N. Y., Feb. 26-28, 1925.

G. M. HUGHES, *Secretary*,
1355 Main Street,
Buffalo, N. Y.

PHILADELPHIA DENTAL COLLEGE ALUMNI

The Philadelphia Dental College Alumni will hold their sixty-second annual reunion in the College Building, Eighteenth and Buttonwood Streets, Wednesday, April 15, 1925.

F. S. FLUCK, *Secretary*,
Philadelphia, Pa.

AMERICAN ASSOCIATION OF DENTAL SCHOOLS

The next annual meeting of the American Association of Dental Schools will be held at the Congress Hotel in Chicago, March 19-21, 1925. There will be detailed discussions of the plan of dental education involving one year of literary work for admission and four years of professional training and a similar discussion of the plan involving two years of literary work and three years of professional training, as well as a variety of other subjects of interest to all concerned. Deans or other administrative officers in charge of curriculums are invited to bring to this meeting, in form for presentation, any problems which they may have that relate to either of the two plans of dental education. If there is not ample opportunity at the time of the presentation of the papers, there will be a round table for the purpose.

MARCUS L. WARD, *President*,
Ann Arbor, Mich.
DE LOS HILL, *Sec'y-Treas.*,
Atlanta, Ga.

NATIONAL FEDERATION OF WOMEN DENTISTS

The National Federation of Women Dentists met concurrently with the American Dental Association at the recent Session at Dallas. Those members that arrived on Sunday were taken for a ride around the city in the afternoon. On Monday, after registration and an informal meeting, the visiting dentists were entertained at tea. In the evening, a formal banquet was given at Melrose Court, professional and club women of Dallas acting as hostesses. A well attended business meeting was held at the Women's City Club, Tuesday morning, at which Dr. Juanita Wade made the address of welcome. Dr. Gillette Hayden, of Columbus, Ohio, president of the organization, presided. A paper prepared by Dr. Vida A. Latham of Chicago on "Pioneer Women in Dentistry" was read. It was voted to assist Dr. Latham by reporting any additional data obtained in an effort to complete the work so well begun. It is requested that any data regarding women in early practice be sent to the secretary, Dr. Stella Risser. Dr. Louise Ball of New York City presented a reel of motion pictures on mouth hygiene. The officers elected for the ensuing year were: Dr. Juanita Wade, Dallas, Texas, President; Dr. Stella Risser, Houston, Texas, Secretary.

M. EVANGELINE JORDAN,
Los Angeles, Calif.

DO YOU KNOW THIS SWINDLER?

Likeness of: Fred W. Goodrich, alias Fred Goodman, alias Fred Gerlach, alias Frank Gurlick, alias Fred Gallagher.

Description: Age, about 49 in 1924; height,

5ft. 8in.; weight, 153 pounds; eyes, hazel; hair, dark, possibly tinged with gray; defects, left thumb and left middle finger amputated at first joint; teeth, fairly good in 1920, gold crowns on upper bicuspid teeth on each side; chews and smokes tobacco; wears best of clothes, wears Elk emblem; very fastidious about personal appearance.

Scheme: Seeks acquaintance of wealthy men at resort cities, gains their confidence, introduces them to a second swindler, who pretends to have inside tip on horse race or stock market, winning fortune in fake brokerage office and offering to share with victim.

History: Arrested as confidence man and crooked gambler at Detroit, Mich., Kansas City, Mo., Denver, Colo., Los Angeles, Calif., and Portland, Oregon.

Sentenced at Denver, Colo., as Fred Good-

rich and served term in state penitentiary at Canon City, Colo., April 18, 1916, to Nov. 20, 1916. Now fugitive from justice from Denver, Colo. Wanted by district attorney and post office inspectors at Denver, Colo., for swindling a dentist, who offers $200.00 reward for information leading to the arrest of this man.

Notify—T. C. GOODSON,
Supt. of Police,
Houston, Texas.

AMERICAN DENTAL ASSISTANTS' ASSOCIATION

The organization of the American Dental Assistants' Association, consummated at Dallas, Texas, November 10-14, 1924, was conceived for the purpose of raising the standard of efficiency of the dental assistant in her service to the profession of dentistry. Its motto is "Greater education for greater efficiency" and its watchwords are "Loyalty and service."

CONSTITUTIONAL BY-LAWS

Objects—The particular objects of this association shall be: To aid in the advancement and elevation of the dental profession by encouraging white women employed as dental assistants to form societies whereby they may secure the educational advantages of lectures, clinical demonstrations, discussions and instruction in the details of their duties; to bring to its members a realization of the responsibilities that accrue to them in their relation to the public; to inspire its members with a desire to render more efficient service and to be truthful, honest and loyal to the profession which they serve; to create a feeling of fellowship and cooperation among its members, and to promote among them a desire for mutual improvement.

The general membership of the association shall consist of the members of constituent societies and such others as may be elected or appointed in accordance with the administrative by-laws. State and territorial societies which are organized and which may organize in conformity with the general plan of the American Dental Assistants' Association will be recognized as constituent societies. In those states or territories where there is no state organization, a local society may become a constituent until such time as a state society is organized. Where there are no state or local societies, dental assistants may join directly until such time as societies are formed.

The business body of the association is known as the house of delegates and consists of the delegates elected by the constituent societies. There is also a board of trustees of nine members who have charge of the property and financial affairs of the association. Each member of this board is elected from one of the nine districts into which shall be grouped the constituent societies. The officers are elected annually by the house of delegates and are: president, president-elect, first, second and third vice-presidents, general secretary and treasurer.

The committees shall be standing committees, special committees and reference committees.

The association shall hold its annual session at the same time and place as the annual meeting of the American Dental Association.

CODE OF ETHICS:

In her dealings with the profession of dentistry and with her associates, the conduct of the dental assistant should be in accordance with the Golden Rule, in both letter and spirit. The dental assistant should be morally, mentally and physically clean, she should be honest in all her dealings with her associates, she should be loyal to her employer and the profession which she serves, as comports with the honor and dignity of a cultured professional woman.

At the organization meetings at Dallas the following societies were represented by delegates and proxies: Alabama Dental Assistants' Association, Burlington Dental Assistants' Society (Iowa), Chicago and Cook County Dental Assistants' Association, Cleveland Dental Assistants' Association (Ohio), Dental Assistants' and Secretaries' Society of Maryland, Educational and Efficiency Society for Dental Assistants, 1st D., N. Y., Educational and Efficiency Society for Dental Assistants, Buffalo, N. Y., Educational and Efficiency Society for Dental Assistants, Massachusetts, Indiana State Association of Dental Assistants, New Jersey Dental Assistants' Society.

Miss Daisy Jones of Lincoln, Nebraska, attended the meetings to take back a report of proceedings to the Nebraska State Dental Assistants' Society; also Dr. Charles H. Henshaw to report to the Iowa State Dental Assistants' Association.

The resolution adopted by the House of Delegates of the American Dental Association at the meeting at Los Angeles, July 1922, was read at the first meeting on November 11, to-wit:

VOTED, That the recommendation of the Board of Trustees be adopted, that dental hygienists, dental mechanics and dental assistants, except associations for profit, be encouraged to establish associations in their respective states, and that they be given conference relations with the American Dental Association, state societies and subsidiary organizations, the details of which are to be formulated by the Committee on Dental Education on conference.

The officers elected November 13 are: president, Juliette A. Southard, New York City; first vice-president, Jessie C. Ellsworth, Chicago, Ill.; second vice-president, Roxie M. McCracken, Indianapolis, Ind.; third vice-

president, Nydean E. Miller, Birmingham, Ala.; general secretary, Anna H. Sykora, New York City, N. Y.; treasurer, Beulah Thompson, Chicago, Ill.

It is the desire of the officers to carry on the plan and work of the association to the very best of their ability. It is hoped to interest every dental assistant throughout the country who is earnest in her endeavor to serve the profession of dentistry in becoming a member. The plan of the association follows as closely as possible that of the American Dental Association, and the moral support and cooperation of the dental profession is earnestly solicited.

A cordial invitation is extended to every dental assistant, as well as to every dental assistants' society, to communicate with the general secretary or the president, in order that every effort possible may be made to bring about cooperation and coordination for the welfare of the dental profession and its assistants.

THE AMERICAN DENTAL GOLF ASSOCIATION MEETING

The meeting of the American Dental Golf Association in Dallas, Texas, while not the largest is point of attendance, was in every respect a very successful meeting, as was also the Frederick Lush Invitation Tournament at the River Crest Country Club, Ft. Worth, Texas. The members were loud in their praise of the courtesies extended to them by the City of Dallas, especially the golf clubs in Dallas and Ft. Worth. No greens fees were charged any of the members at any time during the meeting. This was an unusual courtesy and was very greatly appreciated by the entire association.

A splendid array of prizes were on display in the lobby of the Adolphus Hotel several days prior to the tournament, which added an interest to the competition. These prizes were given by: the City of Dallas; A. P. Cary Company, Dallas, Texas: Pendleton & Arto, Houston, Texas; Medcalf & Thomas Co., Ft. Worth, Texas; Ritter Dental Mfg. Co., Rochester, N. Y.; Spyco Smelting & Refining Co., Minneapolis, Minn.; Cleveland Dental Mfg. Co., Cleveland, Ohio; C. V. Mosby Co., St. Louis, Mo.; August E. Drucker Co., San Francisco, Calif.; The Pepsodent Co., Chicago, Ill.; Lee S. Smith & Son Mfg. Co., Pittsburgh, Pa.; E. R. Squibb & Sons, New York, N. Y.; The Heidbrink Co., Minneapolis, Minn.; Lavoris Chemical Co., Minneapolis, Minn.; Morris-Freeman Co., San Antonio, Texas; The Cleveland Dental Golf Club, Cleveland, Ohio; Dr. C. W. Roberts, London, England; Streamline Golf Co., St. Louis, Mo. The Lambert Co., St. Louis, donated a beautiful cup to be played for in the future and to be known as the Listerine Cup.

The dinner and Calcutta Pool on Sunday evening, November 9, was largely attended. Dr. C. M. Benbrook of Los Angeles, in typical western cowboy costume, was seller of the Pool.

The winners in the golf tournament were as follows:

Championship—Wallace H. Spinks, Los Angeles, Calif.
Runner Up—A. M. Yessler, Woodstock, Ill.

Handicap—L. L. Barber, Toledo, Ohio.
Runner Up—W. E. Sutton, Houston, Texas.

Low Qualifying, President's Trophy—E. F. Woodring, Tulsa, Okla.
Runner Up—L. C. Burgard, Louisville, Ky.

Class A, Low Gross—L. C. Burgard, Louisville, Ky.
Runner Up—F. L. Markle, Peoria, Ill.
Class A, Low Net—Thos. P. Hinman, Atlanta, Ga.
Runner Up—Wallace H. Spinks, Los Angeles, Calif.

Class B, Low Gross—F. Hospers, Chicago, Ill.
Runner Up—E. W. Browning, Salt Lake City, Utah.
Class B, Low Net—W. E. Sutton, Houston, Texas.
Runner Up—P. G. Spencer, Waco, Texas.

Class C, Low Gross—H. M. Davis, Baltimore, Md.
Runner Up—R. H. Stewart, Waco, Texas.
Class C, Low Net—W. L. Shearer, Omaha, Nebr.
Runner Up—E. M. Fisher, Oklahoma City, Okla.

Class D, Low Gross—L. L. Barber, Toledo, Ohio.
Runner Up—Fred Molt, Chicago, Ill.
Class D, Low Net—F. M. Welch, Wausau, Wis.
Runner Up—W. J. Scruton, Oklahoma City, Okla.

Winner of the Frederick Lush Cup (won by Dr. Lush in 1923 and donated by Mrs. Frederick Lush) in the Frederick Lush Tournament, River Crest County Club, Ft. Worth, Texas, L. C. Burgard, Louisville, Ky.

At a meeting of the association, Friday, November 14, the following officers were elected: J. O. Hall, Waco, Texas, president; L. C. Burgard, Louisville, Ky., vice-president; Thos. P. Hinman, Atlanta, Ga., sec'y-treas.; Directors: Frank Casto, Cleveland, Ohio;

Wallace Spinks, Los Angeles, Calif.; N. W. Goodman, Los Angeles, Calif.; J. A. Loughry, Cleveland, Ohio; Ralston I. Lewis, Chicago, Ill.

J. O. HALL, *Sec'y-Treas.*
Waco, Texas.

CORRECTIONS

In Dr. E. C. Rosenow's article "Experimental and Clinical Studies on Focal Infection" in the October issue of THE JOURNAL, Table 1, column 5, 6 per cent should read 66 per cent.

In Dr. Howe's article, "Studies of Dental Disorders Following Experimental Feeding with Monkeys," in the December issue of THE JOURNAL, line six, page 1154, the word "vitamins" should read "the fat-soluble A vitamin."

NEW BOOKS RECEIVED FOR THE LIBRARY OF THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION

The Journal of the American Dental Association promptly acknowledges herewith the receipt of new publications. Books selected from those named on this list are reviewed below. Reviews are matter-of-fact statements of the nature and contents of the publication referred to and are intended *solely to guide possible purchasers.*

Practical Dental Metallurgy. A Text and Reference Book for Students and Practitioners of Dentistry Embodying the Principles of Metallurgy, and Their Application to Dentistry, Including Experiments. By Joseph Dupuy Hodgen, D.D.S., Professor of Operative Dentistry (Formerly Professor of Dental Chemistry and Metallurgy), College of Dentistry, University of California. Sixth Edition. Revised by Guy S. Millberry, D.D.S., Professor of Chemistry and Metallurgy and Dean of the College of Dentistry, University of California. St. Louis: The C. V. Mosby Company, 1924. Pp. 458. Price, $3.50.

According to the preface of this sixth edition, the revisor has not modified the pedagogical scheme adopted by Dr. Hodgen, but has added dependable information accepted by chemists and metallurgists and made essential changes resulting from research.

Local Anesthesia Simplified. By John Jacob Posner, D.D.S., New York City, Chief of the Dental Department, Harlem Dispensary; former Instructor in Oral Surgery, New York Homeopathic Medical College and Flower Hospital; Visiting Dental Surgeon, St. Luke's Hospital, New York City. St. Louis: C. V. Mosby Company, 1924. Fifty-five illustrations; pp. 114. Price, $3.50.

According to the foreword, the author, in the interests of brevity and clarity, has omitted much already known data. Details concerning structure and nerve supply are not obscured by discussions of anatomy, physiology, etc. An outline of simple technic is presented, emphasis being laid on supraperiosteal injection for infiltration anesthesia and mandibular injection for block anesthesia.

PATENTS OF INTEREST TO DENTISTS.

1396957. Dental wax-warming device, Jay A. Heidbrink, Minneapolis, Minn.

1396933. Tongue depressor, Leo D. Jacoby, Winthrop, Mass.

1397067. Crown tooth, James L. Williams, New York, N. Y.

1397192. Denture and tooth therefor, James L. Williams, New York, N. Y.

59649-50. Design, Dental equipment stand, George D. Heck, Prince Bay, N. Y.

1398087. Flask, Charles N. Coryell, Mamaroneck, N. Y.

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1398761. Orthodontic appliance, E. H. Angle, Pasadena, Calif., and S. R. Atkinson, Atlanta, Ga.

1398545. Mercury lamp, Henri George, Paris, France.

1398560. Artificial tooth, George H. B. Lockett, Gisborne, New Zealand.

1398468. Manufacture of hydrogen peroxid, Albert J. Schumacher, San Francisco, Calf.

1398247. Appliance for holding films for dental radiographs, Thomas B. S. Wallace, Chicago, Ill.

1399007. Antiseptic solution, Allerton S. Cushman, Washington, D. C.

1399312. Snythetic anesthetic and making same, Nagayoshi Nagai, Tokyo-fu, Japan.

1399144. Synthetically-compounded drug product and producing the same, Wilhelm N. Nagai, Tokyo, Japan.

59934. Design, Dental bracket-arm, Percy Russell, Swarthmore, Pa.

59932. Design, Pedestal for dental implements, Percy Russell, Swarthmore, Pa.

59933. Design, Dental stand, Percy Russell, Swarthmore, Pa., A. W. Schramm, Riverton, N. J., and R. S. Woodward, Jr., Haverford, Pa.

1399916. Liquid dropper, Louis V. Aronson, Newark, N. J.

1400028. Dental instrument, Milton Cohen, New York, N. Y.

Copies of the above listed patents may be obtained for 25 cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Prejudice and Progress
Cannot Go Together

By ERNEST V. MADISON

THE pace of modern commercialism is so swift that the dentist must keep his mind alert and receptive; ready to adopt the fastest, safest vehicles and seek the smoothest, shortest roads if he is to keep up with the procession.

The judgment used in buying determines in part the relative size of the expense and profit ledgers; therefore, the buyer should be a man of open mind, thoroughly educated to his buying markets. Above all, he should not delude himself with the belief that he is now operating at the highest possible point of efficiency.

If, in your estimation, you do not measure up to this buying standard; if you have been buying your office equipment, materials and supplies merely because they were bought by your predecessors, or because they are now in your office, is it not time to investigate their suitability to your trade and to your use in meeting competition?

In the advertisements of this issue of *The Journal of the American Dental Association* the condensed facts about products manufactured for your field are told.

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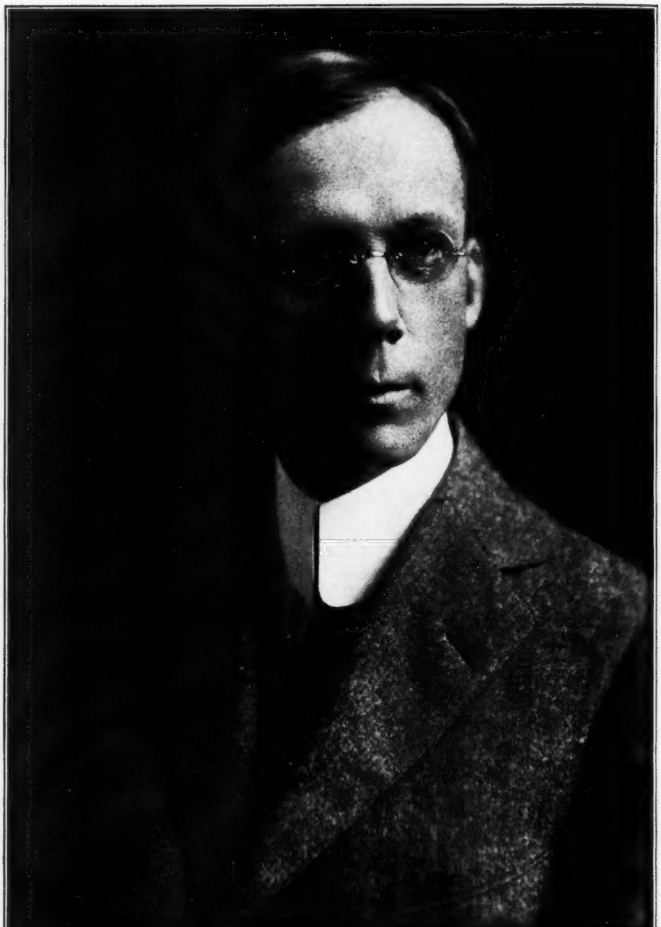

MARCUS L. WARD, D.D.Sc., Ann Arbor, Michigan
President of the American Association of Dental Schools